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ABSTRACT

Participants from Cameroon, Gambia, Ghana, Namibia, Nigeria, and Sierra Leone met as educational planners to seek alternative methods of planning under the changing conditions of education, employment, and human resource development in their countries. The articles presented during the training course include: (1) "Education and Employment in Africa: An Overview of Selected Countries" (B. Sanyal); (2) "Diagnosis of Employment Structures" (G. Gottelmann-Duret); (3) "Education and the Informal Sector" (B. Camara); (4) "Training Issues in the Informal Sector with Special Reference to Cameroon" (J. N. Ngu); (5) "Exploration of the Informal Sector in Buea, Cameroon" (T. Elad, M. Mbang, and G. Gottelmann-Duret); (6) "Estimation of Manpower Demand and Supply" (B. Sanyal); (7) "Need for Pupil/Student Flow Regulation" (G. Gottelmann-Duret); (8) "Tracer Studies to Relate Education with Employment for Development of Human Resources" (B. Sanyal); (9) "Science, Technology, and Large Scale Enterprise Development" (J. W. Forje); (10) "Small-scale Enterprises: Development and the Role of Education and Training" (A. N. Nchari); and (11) "Vocationalization of Secondary Education: The Case of Cameroon" (J. N. Ngu). The five appendices provide a synthesis of country reports, a welcome address by Dr. D. Njeuma, an opening speech by Professor M. F. Minyono-Nkodo, the program of events during the training course, and a list of the participants. (CK)

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Education, employment and human resource development

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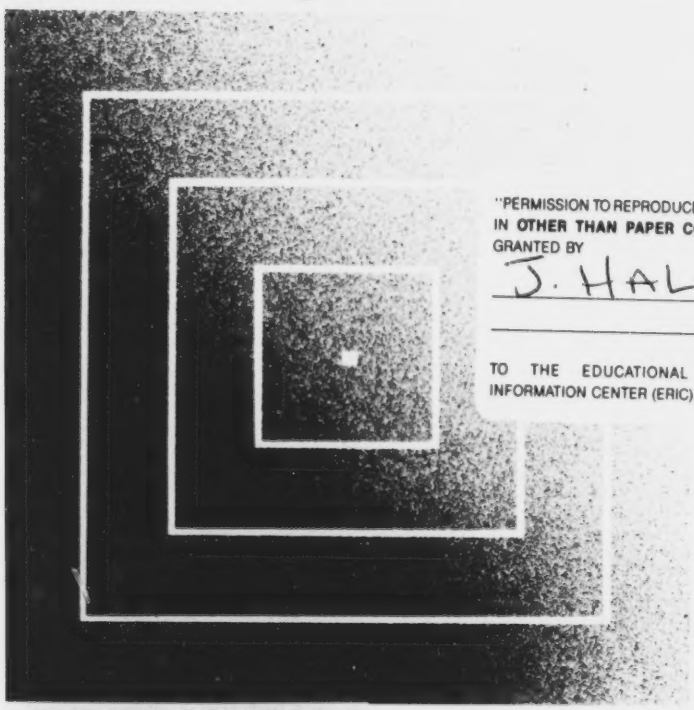

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Report of a sub-regional intensive training course on education, employment and human resource development

Education, employment and human resource development

Report of a sub-regional intensive training course
Buea, Cameroon, 2-13 April 1991

by

B.C. Sanyal, G. Göttelmann-Duret, J.N. Ngu, B. Camara

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Chapter 1
Background and resume of discussions

The Background

Unemployment and under-employment especially among the educated has become a common phenomenon in the developing countries. The low rate of labour absorption resulting from the slowing down of economic growth in the recent past accompanied by a fast growing labour force has aggravated the situation.

However, the phenomenon of unemployment only reveals a fragment of reality: it conceals the enormous amount of under-employment in non-voluntary part-time work and in the under-utilization of job skills and capabilities. The ILO has categorized two types of under-employment: '*visible*', involving shorter than normal periods of work, and '*invisible*' which is characteristic of persons whose earnings are abnormally low, whose jobs do not permit full use of their capacities and skills, or who are employed in establishments or economic units where productivity is abnormally low.

While industrialized countries are affected by unemployment, in most developing countries, under-employment of graduates is a more serious problem than open unemployment. The problem becomes more acute for rural and female graduates.

Both the issues of employment of educated youth and the role of education in providing skills for economic and social development have motivated researchers in the field of economics and education to look for means of achieving a better relationship between education and employment.

At present discussion on employment cannot be confined to the formal sector. Employment in the informal sector is growing at a reasonably high rate and it absorbs a substantial proportion of the labour force in many of the developing countries. More significantly, the growth of employment in the organized sectors is slowing down. Therefore, the informal sector is becoming a more important potential employment generating area to absorb future manpower. The informal sector is in fact the larger sector in most developing countries.

Similarly, education is no longer confined to the formal systems. Out-of-school education/training (non-formal education/training programmes, distance education programmes) is becoming widespread in many countries.

Thus the task of the educational planner is becoming more and more difficult. Traditional methods of forecasting human resources and planning for education are no longer totally reliable. Moreover, the actors which need to be involved in the planning process are no longer from educational sectors alone. The decision making process and methods of planning need to be more broadly based to take into account hitherto neglected sectors in the process of planning.

The challenge before the educational planner is to seek alternative methods of planning education under the changing conditions. Relying on any single technique alone would be dangerous, and the planner has to combine different techniques based on the country specifications. It is with this background in mind that the International Institute for Educational Planning of UNESCO Paris in collaboration with the Institute of Human Sciences, Ministry of Higher Education, Computer Services, and Scientific Research (MESIRES), decided to organize a course on Education, Employment and Human Resource Development at the Buea University Centre to train education and employment planners of English-speaking West African countries and Namibia.

Objectives of the programme

The objectives of the programme were:

(i) To sensitize the participants regarding the general context in which education and employment are to be analyzed;

(ii) To familiarize the participants with the basic concepts and their application in the area of education and employment;

(iii) To train participants in various techniques used to relate educational development to employment needs in the national and regional context; and

(iv) To discuss alternative strategies to link education with employment.

The detailed programme is given in *Appendix 1*.

Participants

The participants were drawn from West Africa and South West Africa. The course was attended by representatives from Cameroon, Gambia, Ghana, Nigeria, Sierra Leone and Namibia. They were responsible officers from the Ministries of Higher and National Education, Planning and/or Labour or researchers at Universities or persons responsible for training educational planners at the national level. The list of participants is given in *Appendix 2*.

Resource persons

The following persons acted as resource persons of the programme:

Mr. Bikas Sanyal, IIEP
Ms. Gabriele Gottlemann-Duret, IIEP
Mr. Boubacar Camara, BREDA
Mr. Joseph Ngu, MESIRES
Mr. John Forje, MESIRES
Mr. Charles Masango, MESIRES
Mr. Agbor Abangma, IPAR, Buea
Mr. Anthony Nchari, PAID, Buea.

Venue and dates

The course began on 2 April 1990 at the Buea University Centre, Cameroon and lasted for two weeks. Dr. Mrs. Dorothy Njeuma, Director General of Buea University Centre welcomed the participants of the programme. The programme was inaugurated by Prof. Minyono, Secretary General, Ministry of Higher Education, Computer Services and Scientific Research (MESIRES), Cameroon. Dr. Bikas C. Sanyal, IIEP Paris gave the Keynote Address (see next section) and Professor Peter Ntamark, Director of the Institute of Human Sciences (MESIRES) proposed a vote of thanks at the end of the Inaugural Session.

1. Education and employment: the West African and Namibian contexts

1.1 *The historical context*

Most African economies were subsistence agrarian before the advent of colonial western industrial civilization. Agricultural and associated activities were based less on the formal systems of skill formation. The family, the work place and skill formation were part and parcel of the cultural tradition and religious orientation of each of these societies. Individual socialisation, the work tradition and skill formation were inextricably combined and embedded in the same social process.

The advent of colonialism witnessed differentiation and transformation of this mode of social process. The evolution of tiny industrial enclaves and commercial centres separated the centres of learning from the centres of production. The education and training system became formalized and oriented towards meeting the immediate needs of the colonial rulers. The focus of manpower development through the formal systems was on producing trained personnel at the subordinate level well versed in the language of the colonial masters. Consequently over a period of time, formal education and language competency became essential and preferable characteristics required for modern sector jobs. Independence brought about a different orientation to the educational system. The expansion of the educational system at all levels became a major concern. And expansion did take place, being linear and generally faster than the economic sectors, paving the way for unemployment and under-employment of the educated. Consequently most countries face the problem of inadequate expansion of the educational system on the one hand (reflected in terms of illiteracy) and unemployment of the educated on the other. Recent discussions on the changing orientation of the education and skill formation process in these countries needs to be seen in this context.

1.2 *Some recent trends*

The educational system expanded considerably in all five West African countries during their post independence period. Namibia which became independent only a year ago (21 March 1990) also has the typical shortcomings of an African educational system: shortages of everything except pupils.

In fact all six countries that faced extremely unfavourable socio-cultural, administrative, financial and political conditions in the past three decades have given very high priority to achieving rapid expansion of formal education. The recent trends in the pattern of expansion of the educational system in the countries represented can be grouped into three:

(i) Countries where rates of growth of the system are positively associated with levels of education i.e. growth rates are higher at the higher levels of education. Countries like Cameroon and Nigeria belong to this category. In these countries during the period between 1975-88 the higher education sector expanded at a faster rate than that of the secondary education sector and the secondary education sector expanded at a faster rate than the primary education sector.

(ii) The countries where secondary education expanded at a faster rate than that of other levels of education, Sierra Leone is alone in this category. Here secondary education expanded at a faster rate followed by primary education and then the higher education sector which grew at an annual rate of 2 per cent.

(iii) Countries where primary education expanded at a faster rate than secondary and higher education: Gambia, Ghana and Namibia belong to this category.

Growth of the economy

Countries represented in the workshop vary in the GNP per capita. As per the 1990 World Development Report, Gambia has the lowest GNP per capita with US$200 and Cameroon has the highest with US$1,010. Although her data is yet to be incorporated in the World Development Report Namibia's 1988 GNP per capita has been estimated to be US$1 100 a comparatively high figure for a Sub-Saharan African country. In terms of rates of growth of GNP three of the countries experienced a moderate but positive growth in the eighties: Cameroon (5.4%), Gambia (3.5%), and Ghana (2.1%), but Sierra Leone (0.2%) stagnated while countries like Nigeria (-1.1%) and Liberia (-1.3%) experienced negative growth rates. All of these countries were going through the longest and most severe crises in recent times. Standards of living have fallen rapidly in the eighties due to depressed export earnings and crippling debt burden.

In terms of sectoral growth, in Ghana the service sector grew at a faster rate than the agricultural and industrial sectors. Cameroon experienced a satisfactory growth in the industrial sector which grew at a rate of 7.8% in real terms between 1980 - 88 and this was due largely to her resources of oil. The service sector also grew at 5.5%. The agricultural sector in Gambia and Sierra Leone grew faster than the industrial and service sectors which

did not grow at all or even deteriorated. In Nigeria, agriculture grew at 1 per cent and the industrial and service sectors experienced negative growths. No data exists to indicate the direction of sectoral growth for Namibia.

Employment and unemployment

Though these countries show varying patterns in terms of growth in education, labour force and economy, they have much in common and hence show generalizable patterns in terms of the employment and unemployment situation.

The situation shows a continuing deterioration of employment in general and that of the educated especially, i.e. secondary and higher educated. This can be partly explained by the slowing down of economic growth accompanied by a faster growth of the labour force - in the sixties the rates of growth of the economy were faster than that of the labour force in many of these countries. However, in the eighties the rates of growth of the labour force surpassed that of the economy giving rise to the ever increasing problem of unemployment.

Even when rates of unemployment are low, the level of under-employment is relatively high in many of the countries. The recent decline or stagnation of economic growth has affected different segments differently in terms of incidence of unemployment and under-employment. It has resulted in:

(i) a decline in the formal sector of employment;

(ii) a decline in real wages especially in the formal sector;

(iii) a rise in open unemployment and under-employment among the educated especially in the urban areas.

A decline in real wages in the formal sectors has some consequences for the labour structure in many of the countries. It has reduced the wage differentials between rural and urban areas on the one hand and between educated and less educated on the other. Consequently rural-urban migration has declined in countries where there was a negative growth in industry (Nigeria and Sierra Leone) the problem of under-employment in the urban areas has increased.

Another significant impact of the lack of employment opportunities and decline in the wage gap is the steady growth of the informal sector, in particular the urban informal sector has grown tremendously in all the countries. At present it accounts for nearly 50 per cent of the urban labour force. This phenomenon has important implications for educational and training systems in these countries.

Another significant outcome of the economic crisis is that the conditions of the Structural Adjustment Programme (SAP) has affected employment in the public sector, which in all the countries represented in this workshop, is the main employer of labour. Privatisation has encouraged the private sector to provide limited employment opportunities for example, but while small scale industries tend to employ people with low qualifications so as to pay them low wages, large scale industries tend to employ only a few highly skilled people in order to maximise profit. Retrenchment in employment of workers was a common feature in the eighties in these countries. While the closure of para-public and public sector

firms, factories and industries added to the number of unemployed in all five West African countries, the numbers of ex-soldiers returning at the end of war swelled the figures of the unemployed in Namibia.

The educational system is increasingly blamed for not producing individuals with relevant skills. And in many countries of the region the trend is towards vocational education. Different countries have adopted different programmes to adjust skill development to suit changing economic and employment conditions. Examples are numerous. The Gambia has adopted several programmes for the development of entrepreneurial skills. Cameroon Opportunities Industrialization Centre trains for both employment and self employment. The objective of the policy is to turn job seekers to job makers.

1.3. *Education and employment: some concepts and observations*

Labour force

According to a widely accepted definition, the 'labour force' consists of all the economically active population. It includes both 'employed' and 'unemployed' (see the definition of these terms given below). The Labour Force Participation Rate (LFPR) is the percentage of total labour force to total population. Generally, population aged ten and above is considered for calculating LFPR. Data on employment in the various parts of the world are collected, processed and published by some international organisations, notably the International Labour Office (ILO). Analyses of such data point at the following general trends in the LFPR:

(i) LFPR of working age women vary widely between countries and regions;

(ii) LFPR of men and women below the age of 25 declines with increase in access to education;

(iii) LFPR of men and women above the age of sixty declines with increase in provisions for old age benefits and other social security measures;

(iv) LFPR of men between the age groups 25 and 55 change only marginally.

The LFPR among the countries participating in the Intensive Course declined during the period between 1950 and 1985. This is a trend common in the developing countries especially during the initial phases of industrialization. Among the countries represented Sierra Leone has the highest LFPR in 1950 and 1985 and Namibia has the lowest during the corresponding points of time.

Female LFPR are, in general, higher in African countries than their Asian, especially South Asian, counterparts, even if female LFPR are still lower than that of male LFPR in all countries of the African region for both the periods. Differences between the LFPR of men and women are smaller in Nigeria and Cameroon than in Namibia where the female LFPR is only nearly one-third of that of Cameroon.

LFPR by level of education are not available from the ILO statistics. The World Fertility Survey of the UN conducted in 1986 provides LFPR by level of education for some of the selected African countries. The survey results show that the LFPR among women aged between 15 and 49 take the shape of an inverted "U" curve, and that the rates are higher among those women who have more than 10 years of education. Generally speaking, participation rates are higher among illiterates; they start declining with every increase in the level of education up to secondary level.

Employment

The 'employed' are often defined as all those who are working and receiving a wage. It should be pointed out that 'work' is a broader concept which is more related to the social roles of an individual; it does not necessarily imply a wage i.e. the criterion of 'being paid' which does not apply to large parts of the working population in many developing countries. Therefore, ILO categorizes the 'employed' into two:

(i) those who are in paid employment; and

(ii) those who are engaged in self-employment activities.

The 'self-employed' are those who work for profit or family again without receiving a direct wage for their job. The unpaid family workers are treated as self-employed.

The *employment pattern* can be analyzed either in terms of sectoral or industrial divisions or occupational categories. In developing countries a very high proportion of the labour force is engaged in primary activities. The share of the primary sector in employment is expected to decline in the process of development. Sometimes the relative distribution of the labour force between different economic sectors -- primary, secondary and tertiary -- is considered as giving an idea of the level of development of an economy. However, a high share of the tertiary sector in employment does not necessarily indicate a high level of economic development as the employment patterns of many developing countries demonstrate.

Unemployment

Unemployment, in the economic sense, refers to those who are involuntarily unemployed; i.e. those who are not working but seeking employment at the on-going wage rate. Based on the factors causing unemployment, it is categorized into frictional, structural, cyclical, seasonal, etc. Seasonal unemployment is very common in the agriculture dominated developing countries. Disguised unemployment or 'under-employment' exists if a withdrawal of a part of the labour force from production does not result in a decline in total output. In technical terms, it means marginal productivity of the disguised unemployed is zero.

Nowadays, under-employment has become a common phenomenon in many developing countries. With slowing down of the growth of the economy in the recent past, under-employment is slowly but steadily spreading to all sectors of the economy. It is of two types -- visible and invisible. The former means working less than the normal hours of

work. The latter exists when more people are engaged in an economic activity than would be needed to produce the output which they actually produce.

Wages

Wage in the economic sense is the reward for the factor of production namely labour. In general it is the payment to the workers and employed persons. The basis for determining wages can be:

(i) payment by time,

(ii) payment by results.

Salary denotes the best example of payment by time. Payment by result relates to the actual work done. Most of the contractual work is based on this concept.

Sometimes a distinction is drawn between wage, earnings and income. Wage is a reward for the work done, earnings include the fringe benefits associated with a job; and income includes earnings and returns from property or wealth.

Real wages have declined during the recent past in many developing countries. A decline in real wages has more adversely affected the educated. Between 1980 and 1988 the real official minimum wages nearly halved in many of the African countries. For example, the real wages in Nigeria in 1988 declined to 40 per cent of the real wages in 1980. In Sierra Leone it fell by 30 per cent, Ghana 22 per cent and Gambia 10 per cent.

1.4. *Employment and training issues in the informal sector*

Education and the informal sector: an overview

The analysis of the interrelationship between education and the informal sector is a crucial step in the overall study of the socio-economic development of developing countries, especially African countries.

The Jomtien Conference on Education for All held in March 1990 led to the adoption of the World Declaration on Education for All, and the framework of action to meet basic learning needs. The concept of basic education including formal, nonformal and informal activities is fundamental and seen as a common but important base for all sectors of the economy and society.

Africa has had a long tradition of small scale production activities. Before the colonial period, several activities such as metalwork, weaving, leather work, jewellery, commerce of different kinds were undertaken to meet social demand. In the colonial and post colonial periods a small formal sector developed with modern industries, manufacturing plants, storehouses, public administration and new management concerns. In all the countries represented in the workshop the formal sector has received specific attention in terms of investment and infrastructural development.

At the conceptual level, the informal sector is defined as comprising those enterprises and activities which have in common one major and dominant attribute: official non status. It has its own dynamics and laws of evolution. Although no systematic information or data exists for all the countries of the region, an examination of available evidence reveals that there is extensive activity in the informal sector. In Yaounde, Cameroon, for example, an ILO study enumerated some 32.000 economic units. If wage earners and apprentices who are engaged in informal activities on a part-time basis are included, the magnitude of this sector becomes even more striking. In those countries for which data was available, it is estimated that at least one quarter of the economically active population are engaged in informal activities.

Participants conducted a survey of the informal sector of Buea which corroborated findings in other countries. The informal sector is expanding with respect to both employment and capital investment. However, the rate of expansion is slow, partly because of their size and also because the technical and financial management of these undertakings is still at the rudimentary stage of development. The sector employs workers with the following background: no education (majority), some formal education, and those whose education is obtained through on-the-job training. Since the composition and characteristics of the members of the informal sector are constantly changing (especially as new entrants are young and educated) it becomes urgent to ask whether or not there should be interventions in the sector in terms of education and training and how to go about it.

Education and training in the informal sector

Two major issues stand out concerning education and training in the informal sector: firstly, how does (or what type of) training contribute to employment and productivity in the informal sector? Secondly, what policy options have the most promise? Since all the countries in the region are facing economic crisis and because the adjustment process currently underway is leading to contraction of employment in the public and private sectors, the burden of employment (and the provision of training) is now being shifted onto the shoulders of the informal sector itself. Any assistance or interventions in that sector must therefore be based on a policy of flexibility of training options which takes into consideration the changing composition of the members of the sector.

The training needs

The education and training needs of the informal sector are as numerous and diverse as there are economic units in the sector. These needs again differ depending on the category or the subsector of the informal sector.

For the purpose of clarity, the educational needs of those within the informal sector as a whole can usefully be grouped under two main headings:

(1) *General or basic education*: reading, writing and calculating, an elementary knowledge of science and one's environment, etc., what primary and general secondary school seek to achieve.

(2) *Occupational education*: designed to impart particular knowledge and skills associated with various economic activities useful in making a living.

The main hope for increasing informal employment, productivity and broadening the distribution of income lies in the growth of small and medium-sized enterprises. Employment here will mostly be of the self-employment type and as apprentices become owners of their own enterprises, they will need workers and other apprentices in turn. While increased demand for traditional skills (e.g. tailoring and dressmaking, masonry and carpentry) often can be accommodated by indigenous training, modern technologies (e.g. food processing, repair and maintenance of machines, motor vehicles, radio and televisions, electrical equipments, etc.) must be created by new training processes. A good example is the Cameroon Opportunities Industrialization Centre (OIC) located here in Buea. This is a nonformal vocational training programme which prepares school-leavers for employment and self-employment.

2. Manpower approach to educational planning

The manpower approach is one of the most commonly used approaches to plan education. This approach argues that provision of supply of adequate manpower with varied skills is the main function of the educational system and therefore education should be planned according to manpower requirements. The projection of demand for different categories of manpower forms the basis of determining enrolments and provision of educational facilities in the schools and colleges.

2.1 *Methods of manpower estimate*

There are various methods to estimate manpower demand. Perhaps the simplest method is to ask each employer about his future requirements for manpower. In a micro situation this is applicable. Among the participating countries, this method may be reliable in the Gambia because of its small size. However, for planning at the macro level it is difficult to rely upon this method. Alternatively, the international comparison method can be used to plan education.

This method involves observing the occupational and educational structure of a country at a more advanced level of development and hypothesize that this is the desired structure for the country for which the forecast is to be made. Similarly, sometimes the model firms comparison method is used to derive the occupational structure. In this approach the occupational structure of the most modern and efficient firms within a country are considered as the ideal and the occupational structure derived is used to plan education. Incremental Labour Output Ratio (ILOR) and density ratio methods are also used to project manpower. The ILOR method extrapolates a particular type of manpower in an occupational category and its corresponding output or national income. The density ratio method consists of estimating stable fractions of qualified manpower in an economic sector and applying these to the total labour force forecasts in various sectors.

The MRP method

The method that was adopted as the method for forecasting manpower in this training programme was that used in the OECD's Mediterranean Regional project (MRP). It was adopted for two reasons:

(i) this is the most commonly used method for manpower forecasts in many countries; and

(ii) it provides detailed and systematic steps for manpower planning.

MRP methodology involves five main steps in assessing the required number of workers by educational levels in the target years of the plan.

The first step is to estimate the future level of out-put (GDP) for the target year. This estimated GDP is very often divided by the total population and expressed in terms of GDP per capita. The next step is to estimate the structural transformation of the economy or the distribution of GDP by economic sectors. In general in all the developing countries the share of primary sectors will be very high. But during the process of development the share of the agricultural sector comes down and that of manufacturing and service sectors goes up. Therefore, the change envisaged in each sector is to be estimated and incorporated because such structural changes will have direct implications so far as the nature of labour skills demanded is concerned. Very often the structural changes depend upon the growth rates in each industry which are often predetermined by policy.

The third step is the estimation of labour productivity by economic sector for the targeted year. Measurement of labour productivity itself is subject to controversies. However, for the purpose at hand, labour productivity is defined in a very crude form as the sectoral GDP divided by the number of workers in that sector. Estimation of labour productivity for the targeted year will help in deriving the number of workers required in the target year. The figures for sectoral GDP (step II) have already been estimated. Sectoral GDP divided by the labour productivity in that sector, the required number of workers in the sector, and their summation across the sectors gives us the total number of workers.

The fourth step involves estimating the occupational structure of the labour force in each of the economic sectors. Generally the international standard classifications of occupations is used to categorize the workers into different occupations. The relative position of each occupation may change. Some occupations may attract more qualified workers, while others may remain the same or be reduced.

The fifth step is to estimate the educational structure of the labour force in the given occupations in different economic sectors. This involves estimating the educational levels of the workers in each occupational category.

Each occupation will have persons with different levels of education. The proportion of different levels of educated within each occupation is computed. The proportion forms the basis of future projections. Based on the projections of this proportion for the target year, the educational levels of workers in each occupation are estimated. It may be noted that since the total number of workers is already estimated (in step III), this gives the workers by educational levels in all occupations. An aggregation of workers by levels of education across occupations gives the total number of workers by levels of education in each occupational category in each economic activity which is the main task of this exercise.

2.2 *Estimation of manpower supply*

The next step is to project the number of persons with the required levels of education over time. The expansion of the educational system can either be strictly planned on the basis of required manpower or be a result of spontaneous expansion based on social demand. Very often expansion of the educational system in the developing countries is based on the social demand approach. In this context demographic factors influence and determine enrolments in the primary levels of education, and the pattern of student flow between classes and stages determines the number of graduates produced by the system. The participation rates of graduates of each level give the number of persons actually available for work.

In this manpower model, the projected demand for different categories of manpower forms the basis for projecting required enrolments at different levels of education. The method of projection of manpower supply in its simplest form is based on student flow rates. Any student entering the educational system can have only three possibilities -- either he or she is promoted to the next grade or is a dropout from the school or is a repeater in the same grade. Based on all these three possibilities the flow rate method estimates the number of graduates for any given number of enrolled students with the help of promotion, repetition and dropout rates. Depending upon these three factors one can decide the excess number of students to be enrolled in each level of education to get the projected number of graduates as workers. This also has to be adjusted for the labour force participation rates of graduates of each level of education.

Balancing demand for and supply of manpower is an important step in the manpower planning approach. During periods of shortages, the yearly intake needs to be augmented. Similarly during periods of excess supply the yearly intakes are to be reduced so as to adjust it to the projected demand. The balancing is an iterative process to obtain a scenario with no excess or shortage for the target year. This process can easily be carried out with the help of computers.

2.3 *Critical review of the manpower approach to educational planning*

Planning prepares people for the future. Forecasting is necessary to predict foreseeable changes in future, and quantification is an unavoidable instrument in forecasting. The manpower approach to educational planning makes use of quantitative methods and provides the broad direction in which changes can be envisaged. It treats education as a sub-system in its inter-relatedness. This approach underlines the necessity for treating education in conjunction with the broad parameters of changes in the economy.

Any attempt to quantify a social phenomenon has its limitations. Realization of this effect has resulted in a type of disenchantment with the over-emphasis on quantification in the planning process; The object and subject of education is man himself. Therefore, there is a need to bring human beings to the centre of the focus. Perhaps, too much quantification may be dangerous and therefore, the plea is to use quantification rather cautiously and only where it is absolutely essential.

The reliability of quantification depends on data availability on the one hand and the techniques used on the other. The manpower approach requires an enormous amount of data to make projections of manpower demand and supply. Often these data are not available and therefore manpower planning becomes difficult, if not impossible.

Even if data are available their reliability is not beyond question. Sometimes there may be initial errors in data or the aggregation procedure and level of aggregation may not be appropriate. Because of these problems, even though computers can handle large quantities of data, this method becomes limited in use.

This approach assumes fixed coefficients of production, which results in a failure to take into account technological changes and their impact on production structure and productivity. Substitution possibilities between labour and capital are increasing in many developing African countries and cannot be easily incorporated in manpower forecasting models.

In large size countries, regional imbalances of manpower are a major problem, i.e. the simultaneous existence of shortages and surpluses of the same category of manpower between different regions. Therefore, even when manpower projections at the macro level show a balance, the reality may be a situation of imbalances of manpower between regions.

The occupation-education matrix forms one of the cardinal elements in this approach to plan education, and there are various problems in this connection. First, for a single occupation there may be an array of qualifications. Second, employers may not be recruiting formally qualified candidates, they may prefer persons who are more experienced to those who are more educated. Thirdly, when there is unemployment, the correspondence between education and employment becomes loose and substitution possibilities between qualified manpower of different varieties increase. Under such circumstances, the applicability of this model becomes further limited.

In most of the developing countries of the region, the informal sector is quite large and it absorbs a substantial proportion of the labour force. Similarly, learning activities are also increasingly taking place outside the formal systems of education. Unfortunately in most of the manpower planning models, informal sector employment and informal/non formal skill formation processes are not taken into account.

In the present context, many of the planning decisions are taken at the political level. What mechanism can ensure that the educational system will be adjusted according to the direction shown by manpower projections? Many a government has succumbed to social demand pressures from individual aspirations and expectations. Therefore, even when projections are very scientific and reliable, their validity may be in question if the educational system expands independent of the projected targets.

On the whole, the discussions showed the need to be cautious in applying this approach to plan education. Though the logic and internal consistency of the model is beyond doubt, one should keep in mind the country specificities and its cultural traditions when planning education. In many countries, this approach may be more applicable in certain areas than in other fields of study. For example, it may be more applicable in those fields of study where there is a close correspondence between qualification and jobs. In any

case one should not treat the figures derived from manpower projections as unique solutions for all time to come. They should be treated as broad guidelines of the direction in which the educational system should expand. Needless to add, detailed labour market analysis becomes essential to ensure that manpower projection exercises are in the right direction and take into account individual aspirations and expectations. Therefore, what is essential is a cautious approach and more informed practice through labour market surveys to periodically review and update the manpower projections.

3. The role of social factors and functioning of the labour market in relating education to employment

3.1. *Student flow regulation as an integral part of human resource development planning*

In many countries of the world the planning of human resource development has to cope with problems such as the 'over-production' of graduates (given the limited prospects of finding corresponding employment) on one hand, and a lack of qualified scientific and technical manpower on the other hand. With a view to correcting such imbalances, it is necessary to explore (and implement) adequate strategies and instruments for improving the regulation of pupil and student flows, over and above whatever use one can derive from manpower planning. These are discussed below.

3.1.1 *Regulating access to higher levels of the educational system*

Among the various factors influencing an individual's decision to go on to post-compulsory education (and possibly enrol in higher education), the following should be given particular attention:

(i) *Structural features* of educational system
Early diversification into educational streams or courses of variable duration (right after completion of primary school) for example, obviously tends to limit the proportion of pupils who are willing to complete the longer secondary courses. Furthermore, enrolment in longer general secondary education will be all the more restricted to the extent that some streams emphasize the terminal (job-related) character of the course and that decent job opportunities are available for those who have not graduated from longer courses.

(ii) *Admission policies* and procedures
The breaking up of the 'automatic' nature of transfer between educational cycles (automatic promotion; rigid policies towards late entry to higher education etc.), may also help reduce the pressure of social demand on the higher levels of the educational system.

(iii) *Cost* of enrolment in upper secondary and higher education
Increased school fees could be used as a means of regulation although its social side-effects should not be overlooked.

In certain contexts, however, where the political and social pressure on the government to expand the capacity of post-compulsory education cannot be reduced, new cost-effective ways and means of providing education at these levels have to be found (distance education e.g).

3.1.2 *Attracting student flows towards certain sectors*

A variety of policy instruments and strategies should be explored with this end in view:

(i) *Information and guidance systems* which could bring young people in touch with the realities of educational choices and their occupational consequences;

(ii) *Financial incentives* (bursaries etc.) to enrol in specific study branches/courses;

(iii) *Selection procedures* facilitating students' access to the 'less popular' courses;

(iv) Policy instruments aimed at *enlarging the potential of possible candidates* for the training branches/courses at stake (location of these courses; measures against sex stereotyping etc.).

Monitoring the effects of these crucial factors on pupil/student flows should become part and parcel of human resource development planning today.

3.2 *Role of tracer studies in relating education to human resource development*

The inter-dependence between educational development and the over-all socio-economic development of a country calls for an analysis of resource potential in natural, physical and human categories; the exploitation of natural resources depends on the development of human resources and vice-versa. Human resources potential is influenced by demographic changes. Education plays a significant role in developing human resources. Therefore, there is a need to plan education to develop human resources. Educational achievement of individuals is influenced by the conditions of employment and unemployment, and the recruitment and promotion policy. That is to say the development of human resources is dependent on the operation of the labour market and the prevailing employment policy.

At the micro-level an analysis of the relationship between education and employment has to take into account the background characteristics, attitudes and expectations of individual human beings. The economy and society and to some extent education influences the behaviour, attitudes, preferences and expectations of the individual. The important micro characteristics on which one needs information are:

(a) Individual characteristics like age, sex, marital status, etc.

(b) Family characteristics like family size, education, occupation, etc.

(c) Community characteristics like caste, religion, urban, rural, etc.

(d) Early educational characteristics like type of school, academic performance, type of education etc.

The educational career of an individual is directly influenced by educational expectations. The family background and future expectations decide the institutions in which one is to study, field of study pursued, academic performance etc. The occupational career of an individual, on the other hand depends on educational career, labour market situation, occupational expectations etc. The career information received, placement services used, recruitment method adopted, type of post held etc. are important factors in occupational career.

The basic thrust of this approach, is that the education system can change the characteristics of individuals, families and the community so as to make transition from institutions of education to work smooth. This method involves tracing back the history of each individual from his present position with respect to all the micro-characteristics detailed above. In some cases, tracer studies are also undertaken by following a cohort of students, eliciting information on their positions at fixed intervals, say at five years over a period of time. In both cases one is tracing -- whether forward or backward -- the important socio-economic characteristics of an individual.

As can be seen this method involves a lot of data collection on various aspects. So far as macro information is concerned, data can be collected from the secondary sources. For micro characteristics, data are collected from the primary sources. Generally in tracer studies, samples are drawn from students, graduates, employees, unemployed, etc. and a detailed questionnaire is used to collect data on micro-characteristics.

Tracer studies can be of two types:

(i) Employees are identified and they are traced back regarding their various characteristics pertaining to individual, family, community, recruitment practices etc. Most of the IIEP studies belong to this category.

(ii) In some of the tracer studies, individuals are followed up after a certain period. Such attempts can be termed as follow-up tracer studies.

Recent surveys conducted in Cameroon and Nigeria demonstrate that employability, career development, educational pursuits are influenced to variable extent by age, sex and other socio-economic background characteristics of individuals. Empirical results of tracer studies throw light on the pattern of social demand for education and the career path of individuals and can be useful for educational policy-making.

4. Strategies for a better match between learning and work for human resource development

Human resource development (HRD) is a wider concept than labour force and manpower. Human resources refer to the sum total of society's competencies. These competencies need not necessarily refer to the ones which are utilized in productive work in

economic sectors. It refers to all competencies which contribute to playing an active role as a citizen of a country.

The development of such competencies cannot be left to the formal education system alone. Therefore what is needed is a broader concept of HRD which incorporates all learning activities -- formal, non-formal, informal, on-the-job training etc., -- existing in a particular society.

At present different agencies involved in the task of HRD are separate and not integrated and linked. For example, education is treated as separate from training and very often a substantial proportion of training activities takes place outside the domain and perhaps without the knowledge of education departments/ministries. Secondly, work and employment are organized in a way that is often divorced from educational and institutionalized training activities. Finally, educational planning is mostly done at the macro-level and it loses sight of the micro dimensions. Therefore it is difficult to establish linkages between employment, work, training programmes and the educational system.

Perceptions vary. The perception of the educational planner is not translated or communicated to educational functionaries, to trainers and to the employers. The ultimate beneficiary and recipient of these activities, namely learners are totally neglected in the process. The perception of the learners regarding what he/she wants is not given due consideration.

In a planning framework we have to integrate these different activities and perceptions. Therefore, there is a need to shift the emphasis from formal to informal sector activities and micro-enterprises, from employment to the broader concept of work and from education to learning. The traditional conceptions of planning education are not able fully to incorporate them.

The strategies for a better match between education and HRD were discussed separately for small scale enterprise development and training; for large scale enterprise development and the role of education and training; education, training and productive work; and the vocationalization of secondary education.

4.1 *Small scale enterprise development and training*

In most developing countries, the urban population and urban labour force have been growing very rapidly in recent decades. Many of them could not be absorbed in the organized sectors of the urban economy. Nonetheless, widespread rural-urban migrations did not lead to open unemployment in many economies of the developing world, the reason being, that many of the new entrants are absorbed in small enterprises or self-employment activities which lie outside the formal and government regulated systems. This type of employment is often referred to as the informal sector.

Some characteristics of the informal sector and of small scale enterprises (SSE) include (i) the number of persons employed, usually less than 10, although in Mauritius the maximum number is twenty five; (ii) unregistered, non application of legal and administrative framework (in some countries of the region this criterion is usually not true); (iii) production capacity in the form of equipment (especially for small manufacturing

concerns who do subcontract work for the formal sector); (iv) low annual turn over; (v) simpler type of technology used, and for service industries they are judged by (vi) the smaller number of customers.

Because of the continuous deteriorating economic situation in many African countries highlighted by declining revenues, rising levels of unemployment and external debt and imbalance in trade, there is an urgent need to step up local activities. The promotion of SSE in all relevant sectors of African economies is an important solution to economic problems.

The Pan African Institute for Development (PAID -- Buea, Cameroon) has carried out many studies in several African countries on small scale enterprises. PAID's experience reveals that there is (i) no shortage of sound business ideas amongst African entrepreneurs, (ii) lack of managerial skills (iii) inability to keep records, (iv) inadequate business qualifications and experience, (v) lack of credit facilities and extension services.

Most African countries represented in the group lack policies and programmes that can adequately promote SSE to effectively perform their role. Gambia is the exception. Even where policies do exist, for example, as in Cameroon, the problem then becomes one of implementation. Cameroon's policies of promoting small scale enterprises and industries through its credit programme (FOGAPE) and training programme (CAPME) has not been effective. The training for small scale enterprises it was agreed require that the target groups be identified and separated; the training needs for existing entrepreneurs are likely to be different from those of future entrepreneurs, that is those forced by circumstances to enter the informal sector and to begin a small scale enterprise, such as school leavers, redundant public sector workers and retired civil servants.

The participants of the intensive course visited many informal sector enterprises and interviewed persons working in the sector in Buea. The discussions that followed, based on the field visits, threw more light on policies to be followed in the context of informal sector activities.

The major controversy in the discussions centred around whether the informal sector should be formalized or whether it should be left untouched. The role of the government and the points of intervention are crucial issues for the former position. It was felt that the present pattern of the informal sector entails the government losing revenue and therefore there is a need to formalize it. Moreover, formalization of the informal sector will result in better wages and working conditions for the employees engaged in the sector.

The other view was that informal sectors are unavoidable elements in the development process. The clientele group they are serving is different. Any attempt to formalize these activities will result in total discouragement of this mode of production. And most of the workers in this sector are, in a sense, those who could not enter the formal sector. Moreover, in recent years, formal sector employers also have a vested interest in keeping these enterprises informal. Very often through sub-contracting systems, formal sector employers are in a position to escape paying high wages in the formal sector since workers in the informal sector do not enjoy any benefits from social security schemes. If they are formalized, then it becomes a problem for the formal sector employers themselves. In this sense, informal sectors are 'used' by formal sector employers. The very fact that

informal sectors continue to expand shows that these sectors are essential in the development process and hence their potential should be realized fully. Therefore, one needs to think in terms of interventions to encourage them. The entry point may be training.

Can employees in the informal sector be trained? The field survey has shown that many of them do not want training. This is primarily because the opportunity cost of training is too high in terms of time invested. Secondly, many of them are not convinced about the necessity of any training. It was argued that the employees in the informal sector are not articulate enough and cannot decide upon the type of training good for them. Therefore, there is a need to intervene to identify training needs in order to identify useful training programmes.

From the training needs point of view, the informal sector should not be seen as a homogeneous entity. One can identify advanced units and marginal units within the informal sector. The micro-enterprises can be treated as the advanced units. The training needs in these units can, perhaps, be identified. At present most of the workers in this sector get on-the-job training which is how they pick up the skills required for job performance. It may also be true that the workers in this sector may be able to better articulate their training needs when compared with workers in the marginal units, like food endors, etc.

4.2 *Large scale enterprise development and the role of education and training*

Large scale industry in Cameroon, particularly the oil industry takes care of training its own high level manpower. A widespread system of non-formal education in the various companies has been established using a variety of training modes in the country and abroad. Each company's own training centre is primarily favoured followed by the use of a local training centre. The latter is that of Cameroon's SONARA refinery which now does most of the training of skilled workers. It cannot as yet handle entirely the needs for high level technical manpower but has an in-company scheme for the training of managers. Under this method good results have been achieved as regards smooth operations, safety, Cameroonisation and management efficiency. It has made an external impact by training personnel for other firms and by giving work opportunities to students from the University of Yaounde. However, few R and D workers have so far been trained for Cameroon. These are costly and usually sent abroad for long term study and experience.

4.3 *Education with production*

The notion of education with production considers involvement of pupils in production as central to the learning process. It refers to a situation where productive work is an essential part of general education i.e. incorporation of production into the curriculum of primary and secondary schools. The intention is to see that pupils develop a broad range of practical skills, get acquainted with the world of work and learn about the application of science and technology to the process of production. It is not meant to train people in job-specific skills but to enhance the overall value of general education as a preparation for life. The objectives are: (i) to develop interest and respect for manual work; (ii) to inculcate desirable social values and habits; (iii) to bring school closer to the realities of everyday life.

Education with production can be organized in different forms:

(i) Production within schools which can be in various ways: (a) vocationalized secondary schools; (b) vocational schools; and (c) technical schools.

(ii) Introduce training in the work place: (a) apprenticeship, (b) in-firm training,

(iii) Education and production where the idea is that schools should focus on theoretical aspects while the work places impart training.

Cameroon's experience shows that she is slowly giving up the idea of introducing productive work in general education schools (primary or secondary). The difficulty is at the implementation level. There are various problems like: (i) resistance from teachers since they are not adequately trained or prepared for this task; (ii) students are not interested because it is not evaluated and no marks are awarded to these activities; (iii) in many instances the initial enthusiasm waned in terms of implementing this policy; (iv) the graduates from these types of courses are not better than others in terms of finding employment; (v) parents are resisting because they feel that children are sent to school to learn academic subjects and many of them do not like the time to be used for manual work or physical labour.

Such experiments may work at the micro-level, on a limited scale. Diversified curriculum and work-oriented programmes (pre-vocational subjects) are more a priority area for countries and donor agencies.

4.4 *Vocationalization of secondary education*

In industrialized countries, there was a demand on the part of employees to keep training separate from the enterprises. In fact, the pressure for vocational courses or vocationalization of education stems from this premise. However, in the third world countries, it came as a new idea to make school education more skill-oriented.

The advantages of introducing vocational education are many: (i) it contributes to improving economic efficiency and raising productivity; (ii) fosters a climate of industrial culture in the less developed countries; (iii) it equips the students with skills which are directly useful in regular or self-employment activities; (iv) it improves the overall quality of education by making it less abstract and more related to their own work environments; (v) it gives a better opportunity to the less advantaged segments of population; (vi) it helps in reducing the pressure for higher education to expand if vocational courses are made terminal in nature.

But in practice vocational schools have not shown equal success across countries. In many cases, vocational courses are accused of rigidity, the reasons for which essentially stem from the teachers and equipment. If the curriculum is planned at the central level, then again it contributes to rigidity. There is widespread unemployment amongst graduates of vocational course in many countries.

In assessing the effectiveness of vocational and technical education we have a difficulty in estimating the occupation-economic sector matrix not only because the relevant data is lacking but also because the probabilities of finding a job depend as much, if not more, on the macro-economic conditions of the country than on the quality or type of education provided.

The important questions in vocational education are: (i) who should organize it? (ii) who should pay for it? (iii) in which form should it take place? and (vi) who should check the quality for certification? Discussions on the country's experiences provided an answer to these questions.

In Cameroon, vocational courses are organized by the Ministries of National and Higher Education. Vocational and technical courses are also provided for by the private sector. At the post secondary level other ministries have various types of vocational and technical programmes. Unfortunately, the vocational education authorities are still to take into consideration the changing demands of the manufacturing sector and the need to train for self-employment.

If vocational and technical secondary schools are to succeed, then basic skills preparation must be integrated throughout the vocational curriculum and the focus shifted to the development of the individual student. That is preparing the student for a lifetime of work in a dynamic economy.

4.5 *Synthesis for a better match between education and human resource development*

The panel discussion on strategies for a better match between education and human resource development brought out the following conclusions:

First, estimates of manpower needs are necessary but not sufficient tools for making education more responsive to human resource development needs; individual attitudes and expectations, other social factors as well as the functioning of the labour market, including its incentive structure, play important roles.

Second, an information base is essential for making educational planning effective.

Third, improved funding mechanisms for education with special reference to diversification of funding sources as a part of a global strategy of education -- industry co-operation could also be very helpful.

Fourth, a better articulation between the formal and a work-oriented non-formal system of education is another way to improve the contribution of education to human resource development.

Fifth, assessment of training needs for the informal sector and consequent training strategies are also helpful. Consideration of the gender problem in both education and employment is another contributing factor.

Finally, emphasis on managerial skills both for education/training and for human resource would go a long way in solving the mismatch between education and employment in all the African countries participating in this workshop.

Chapter 2

Education and employment in Africa: an overview

by Bikas C. Sanyal

1. The historical context

The relationship between education and employment as an essential element of human resource development has evolved over time in Africa as in other continents of the world.

Most African countries' economies were essentially subsistence agrarian before the advent of the western commercial and industrial civilization. The primary task of the community was to produce food, the most important basic need. All ancillary crafts and occupations supported this primary function and services necessary for subsistence were provided by different social groups. The socialization of the individual, his training in a given skill and in the value system of the society, were all indivisible elements of a single learning system. The family, the workplace, the formal centres of learning, and the religious institutions, all imparted education on how to live, work and follow the rules of society into which an individual was born. The social leaders, the elders, expert craftsmen and religious teachers set the standards and provided the learning. The world of work could hardly be separated from the world of education.

Even during the period when many of the developing countries were under colonial domination, the same system prevailed in most of these countries, particularly in the rural areas where most people lived and which remained unaffected by the western civilization brought by the foreign rulers. However, in the urban areas and in the tiny modern sector of the economy, namely the government and commercial sector, the colonial rulers needed local manpower at the subordinate level, whom they trained in institutions set up according to their own needs. The formal education system which was producing these cadres was elitist, and generally the language of instruction was that of the foreign colonial rulers. Education was restricted in quantity and type to meet the needs of the rulers.

At the same time, the modern organized sector started recognizing the completion of an educational programme as a requirement for employment, grade, perhaps arbitrarily according to the type and duration of studies. Education and employment now had a correspondence, but the inherent linkage was lost; the world of education became separate from the world of work.

At independence, many of these countries had to expand their educational systems. Development efforts and departure of expatriates holding high-level decision-making positions created a heavy demand for education in quantitative terms. In addition, accelerating scientific and technological development, the internationalization of the means of production, the division of labour and of knowledge have among other factors, led almost all countries of Africa, to critically examine their systems of education to ascertain whether

they are meeting the challenges of the time. The best way education can serve society today is to prepare people capable of tackling the emerging problems that beset their particular society. These problems are moral and ethical on the one hand and materialistic on the other, related to the basic necessities of life, namely food and nutrition, health and sanitation, housing and shelter. These basic needs can only be satisfied today through economic activity, and the education system is required to provide the necessary skills in order that these basic needs may be supplied. In a static, subsistence economy, education may only need to bother about mind and character, in an information, industrial and commercial economy, it has to cater for 'matter' as well. Clearly, education today cannot justify its existence by providing only academic learning for mental or spiritual development; it has to convey the necessary skills for economic development in addition to cultural and social development, in order that natural resources might be explored and exploited, products stored and distributed, services managed, and resources conserved for future generations. Such skills would not only enable solutions to be found to present problems but also prepare young people to work on the unpredictable, complex and dynamic problems of the future. Some characteristics of this expansion are given in the following section.

2. A brief note on educational expansion

We will restrict our note to the countries which are represented in this course. We take liberty also in fixing the period of reference. For the development of education, because of availability of data, we will consider 1975 to 1988 to be the period. In some cases, however, the period and year of reference will vary again due to data constraints. Before 1975, the growth of education was, in general, faster than that of 1975-88 because of a lower base. The data are given in Table 1 for all the countries present in the course.

Table 1. **Average annual growth rate of enrolment during 1975-88 and Gross enrolment ratio (GER) in 1987 in selected countries of Africa for different levels of education** (Any change in the reference period or in the level are given in the footnotes).

Country	First level growth rate	GER	Second level growth rate	GER	Third level growth rate	GER
Cameroon	4.4(1)	109	9.3	26	9.5(2)(5)	3
Gambia	8.8	65	8.0(1)(3)	16	-	-
Ghana	3.0	71	2.8	40	1.4(2)(5)	2
Liberia	-2.4(2)	35	3.0(4)(3)	18	6.5(1)	3
Nigeria	5.4	64	13.0(3)	24	13.6(4)(5)	3
Sierra Leone	5.2	60	5.9(3)	19	2.0(6)	1

Source: UNESCO: UNESCO Statistical Yearbook, 1990, UNESCO, Paris.

(1) 1975-87

(2) 1975-86

(3) Second level general only

(4) 1975-84

(5) Universities and equivalent institutions only

(6) 1975-80

Note: Gross enrolment ratios are obtained by expressing total enrolment in a level as a percentage of total population in the relevant age group. Due to inclusion of over-aged and under-aged individuals in each level enrolment, the figures are biased upwards and those for the first level may exceed 100 per cent.

One may observe from Table 1 that in the majority of the countries the higher the level of education, the higher is the growth rate in enrolment. In Liberia, enrolment in first level even declined during the period 1975-86. In spite of a very high growth rate, total enrolment in higher education as a share of the total population in the relevant age group (20-24) remained desperately low in most of the countries. While the world average is 12.8 per cent the highest is only 3 per cent in Cameroon and Liberia. Nigeria and the Gambia have enjoyed the highest growth rates at 13.6 per cent and 95 per cent respectively, whereas the other countries have low growth rates. The rapid growth in higher education is not only due to economic needs for skills but also due to socio-political pressure. The growth rate for all the countries was even faster in the earlier period. Due to economic and social reasons in some countries, it slowed down during the period 1975-88.

There is a hidden characteristic of the growth in higher education in these countries. When one analyzes the growth by disciplines, it is noted that in most cases the growth rate has been faster in the arts-based disciplines than in the science-based ones.

The reason for expansion in arts-based disciplines is principally economic -- these disciplines being less costly. The growth in enrolment resulted in an increased number of graduates from secondary and higher education every year. To what extent the economy of the different countries grew so as to be able to absorb the increased number of educated youth in the employment market is discussed in the next section.

3. The economic situation of the selected countries

Table 2 shows a very pessimistic picture of the economic situation. All countries except Cameroon had a lower growth rate in production in the formal sector of the economy than the growth rate in population during the period 1980-88. Thus the economic situation deteriorated in these countries in terms of GNP per capita. Some of the countries had a net decrease in production, e.g. Liberia and Nigeria.

Table 2. Some basic indicators of the selected countries in Africa

Country	Population (millions) mid-1988	GDP per capita (US$) 1988	GDP growth rates (percentage 1980-88) Total	Agriculture	Industry	Services
Cameroon	11.2	1,010	5.4	2.4	7.8	5.5
Gambia	822	200	3.5	5.0	1.9	2.9
Ghana	14.0	390	2.1	0.5	1.9	4.9
Liberia	2.4	440	-1.3	1.2	6.0	-0.8
Nigeria	110.1	290	-1.1	1.0	-3.2	-0.4
Sierra Leone	3.9	300	0.2	2.2	-4.9	0.7

Source: World Bank: World Development Report, 1990, World Bank, Washington D.C., 1990.

The countries represented in the course are going through the longest and most severe crisis in recent times. Standards of living have fallen rapidly in the eighties due to depressed export earnings and crippling debt burdens. The employment situation also

deteriorated sharply in the eighties due to: (i) the demographic impact on the labour supply; (ii) lack of economic growth, as indicated before; (iii) phenomenal expansion of education leading to a substantial mismatch between supply and demand for skills in the employment market. Real wages declined more rapidly than income per capita since 1980. A significant proportion of qualified and employed manpower needed a second job, often in the informal sector or practising their profession on their own account or taking up agriculture as a secondary income-generating activity. In most of the countries represented here, the public sector is the most important wage employer, employing often more than half of total wage employment and playing the role of employer of last resort. The expansion of public sector employment did not correspond with the expansion in the demand for public services and in the eighties some of these countries were forced to control recruitment and in some cases to retrench public sector workers. However, the informal sector, which was first 'discovered' in this part of the world, has been absorbing a considerable proportion of labour force playing the role of an 'urban labour sponge'. While in the case of Sub-Saharan Africa, unemployment has increased by 61 per cent during 1980-85, wage employment has increased by a meagre 5 per cent, but informal sector employment has increased by 38 per cent as against a labour force increase by 29 per cent.[1]

One special characteristic of unemployment in the countries represented in the group is the higher unemployment rate among the educated than those without formal education. In the past, the practice of an implicit or explicit guaranteed employment policy pursued by most governments artificially lowered this rate. During the eighties, such policy was abandoned by many countries due to budgetary constraints leading to graduate unemployment.

A large sum of money has been invested in educating these citizens which could otherwise have been invested in job creating productive programmes. It is not only the economic aspect which makes this problem so grave. The social and political stakes are also very high. While the problem of shortage of educated manpower has been tackled reasonably well by various means as we shall see during the seminar, the problem of surplus of educated manpower resulting in unemployment and underemployment is not amenable to any easy solution. We shall discuss the different aspects of the problem of unemployment in the following section.

4. The characteristics of the problem of educated unemployment

One can make an important distinction between two different aspects of unemployment: incidence and duration. Unemployment incidence is the percentage of unemployed in a given population group. It is the *'unemployment rate'*. On the other hand, unemployment duration has a calendar time attached to it. It is expressed as *'absorption rates X years after graduation'*, or simply means years or months unemployed since graduation. Research carried out at the International Institute for Educational Planning (IIEP) of UNESCO and other research studies demonstrate some relationship between unemployment incidence and the level of education. In many cases, the relationship takes

1. ILO: World labour report, Geneva, 1989.

the form of an inverted U-shape, meaning that it is the graduates of the middle-level education who are most hit by the unemployment problem.

In respect of duration of educated unemployment, it appears that it is a sharply declining function of age, i.e. it is principally a youth problem, nearly every graduate finding a job after some time.

However, the phenomenon of open unemployment only reveals a fragment of reality; it conceals the enormous amount of underemployment in non-voluntary part-time and in the under-utilization of skills and capabilities. The ILO has categorized two types of underemployment: visible underemployment, involving shorter than normal periods of work, and invisible underemployment which is characteristic of persons whose earnings are abnormally low, whose jobs do not permit full use of their capacities or skills, (qualification esclation), or who are employed in establishments or economic units where productivity is abnormally low, for example, the vast informal sector prevalent in all African countries.

As has been mentioned before, in most African countries, underemployment of the educated is a more serious problem than their open unemployment. The problem becomes more acute for rural and female educated.

In countries where the educated are guaranteed employment, there is no open unemployment; however, underemployment is a common phenomenon, particularly of the invisible type. Such a situation is to be found in most countries represented here even though these countries have an abnormally low proportion of educated youth.

Both the issues of employment of educated youth and of the role of education in providing skills for economic and social development have motivated researchers in the field of economics and education to look for means of achieving a better relationship between education and employment.

As is to be expected, they differ in both their points of view and the nature of the techniques of educational planning they advocate, which will be discussed during the course.

5. Objectives of the course and the participants

Improvements have been made in techniques of manpower forecasting, but there is a general admission of their limits even in centrally planned economies. We are on the way towards a paradigm shift in the field of manpower planning. The diploma disease is widespread. We have to look for both curative and preventive measures. This calls for a wider approach than has been applied so far. We have to look at needs for manpower of course, but also at needs for jobs/work. We need to discuss the role of the informal sector, is it possible to plan for it; what can the school do in this context? Another important aspect is the vocationalization of education at different levels and the development of entrepreneurial skills among educated youth. What can be the possible role of the education system? Is it possible to stem social demand for higher education by wage policies or other measures? In order to explore these complex inter-relationships for selected African countries, the International Institute for Educational Planning of UNESCO has taken the initiative in organizing this Intensive Training Course. Those attending the course are planners

responsible for decision oriented activities in Ministries of Education, Planning and/or Labour or researchers at universities and at Planning Commissions or persons responsible for training educational planners at national or regional level. The particular problems of the countries and the functions of the participants reconciled with the above objectives were the deciding factors in the design of the content.

6. The content of the course

The course will have four main components each having implications for educational planning to develop human resources. These are:

(a) Diagnosis of the employment situation,
(b) Techniques of manpower forecasts and their evolution,
(c) Analysis of factors of social demand and labour market operation, and
(d) Exploration and analysis of methods of implementing alternative strategies to achieve a better relationship between education and employment for human resource development.

Diagnosis of the employment situation

In this module, the participants will be introduced to some of the basic and elementary concepts useful in diagnosing the education and employment situation in a country. How the economic activities are identified and measured in the formal sector? How the human resource for economic production is identified and its role determined? How the employment situation can be analysed? How the informal sector of the economy functions? What role can education and training play in this expanding sector of employment? Answers to the above questions will be sought by means of lecture-discussions, group work and field visits and hints will be derived for policy formulation. Given the nature of the economy of the countries represented, the role of training in the informal sector will be given special emphasis.

Techniques of manpower forecasts and their evolution

In the discussion of this technique, highlighted by concrete examples, the following questions will be asked: What are the variables and parameters that are considered in forecasting the demand for manpower for different economic sectors? How is the uncertainty in the economic situation accounted for in these forecasts? How is the development of technology accounted for? In what way has the manpower forecasting technique evolved over time in a given country where this technique has been practised over a long period of time? How are educational plans formulated and implemented? What are the difficulties in achieving the balance between demand and supply? Answers to the above questions will be sought by means of a computerized simulation model. Policy implications of alternative strategies of human resource development will also be dealt with.

Factors of social demand and labour market operation

Mere forecast of inputs into, and outputs from the educational system does not ensure the actual availability of educational opportunities to all citizens. Nor does the

forecast of manpower demand ensure the insertion of school leavers in the labour market. On the one hand, socio-economic status of individuals (age, sex, home background, parental education, occupation and income status etc., along with early educational characteristics) play a decisive role in determining the transition from home to school within school and from school to work. On the other hand, the type of technology the enterprises use, the way they organize work and establish their employment structures, as well as the manner in which they recruit their personnel play just as important a role. It has often been observed that education is not the only -- nor even the most important -- criterion applied by recruiting firms.

Questions then arise: what determines demand for education in general and in specific types and disciplines? What role does career guidance play in the choice of stream and a career? What is the incidence and duration of unemployment of the educated by level and type of education? What criteria do the employers apply for recruiting a school leaver? What is the relative importance of the cognitive, ascriptive and behavioural aptitudes as criteria for recruitment? What factors determine horizontal and vertical mobility of the workers? What factors ensure utilization of qualifications? What role does education play in the transition from school to work and on mobility (horizontal and vertical) in working life? What role can the techniques of educational planning play in making the transition from home to school and from school to work easier in spite of the limited role of the education system in society?

To answer these questions surveys have been conducted on students, employers and employees which are analyzed in the light of the general socio-economic context of the country concerned. One or two concrete case studies will be discussed after the presentation of the rationale of the surveys and their potential role in educational planning.

7. Alternative strategies for a better relationship between education and employment

Different forms of delivery systems of education are being tried out to reduce the gap between the world of education and the world of work, including co-operation with industry, which has so far been neglected. Planning techniques for such alternative structures must be applicable to and consistent with the national development strategy. It is with such a relevance criterion in view that a few of these new structures and delivery systems will be discussed.

They will be selected from country cases where there are a variety of work-related programmes in education and productive work, vocational education, education/training programmes for large and small-scale enterprises, employment-oriented diversification of post-secondary and secondary education.

8. The organization of the course

The above techniques and strategies will be dealt with in plenary group sessions, practical exercises and field trips, where the participants in the course will be joined by one or two staff discussion leaders. Both the staff and trainees have prepared background notes

based on their own experience and perception to be used for the course. At the end of the course, a written report will be published for those interested in organizing training courses and for the sponsors of this course.

9. Acknowledgement

To complete this address, I would like to thank all those who have contributed to the organization and financing of the course. The West African Regional Office of the International Development Research Centre (IDRC, Canada), the British Council at its Headquarters in the United Kingdom and its offices in Yaounde, the United States Agency for International Development Office in Cameroon and the Commonwealth Secretariat have sponsored the participants for the course. I am grateful to all these agencies. My thanks are particularly due to Dr. Dorothy L. Njeuma, the Director-General of Buea University Centre, and her colleagues for hosting this course in Buea.

Chapter 3

Diagnosis of employment structures basic concepts[1]

by Gabriele Göttelmann-Duret

Very useful information concerning the employment situation and the education employment relationship can be obtained from the analysis of census data and other survey data (household surveys, manpower surveys) which are regularly collected in the different countries. Censuses for example are now available in (almost) all countries for two to three years. Most countries have indeed conducted censuses in the 1960s, 1970s, and 1980s.

The object of this lecture and of the following exercise is to show how one can prepare a diagnosis of the employment situation and of the education employment relationship using data which is normally available and to illustrate the sort of conclusions that can be drawn in terms of medium- and long-term prospects. The information to be analysed will concern:

- the population structure by age sex urban and rural areas;
- the level of the economically active population and its structure by age, sex, urban and rural areas (labour supply);
- the level of employment (labour demand).

At all stages we will analyze the structure by educational level and the education-employment relationship.

It is useful to recall first a number of definitions. The discussion will then be illustrated with examples from different countries.

1. Evolution and structure of the population

Three major indicators will be analysed:

- the population growth rate,
- the urban population growth rate,

1. *Text by F. Caillods and T. El Hachem; presentation by G. Göttelmann-Duret.*

- the percentage of the population living in urban and rural areas, as they have an incidence on the number of pupils to be enrolled and on the size of the population seeking employment.

2. Level and structure of the economically active population

2.1. *Definitions*

- *The economically active population* comprises all persons who furnish the potential supply of labour for the production of economic goods and services. It is measured in relation to a given period of reference (as much as a year, or as little as one day or one week) (ILO 1988).

  The economically active population, which is also called the labour force, includes the employed and the unemployed persons.

- *The working age population* depends on the school leaving age and on the age of retirement. In developed countries the working age population includes all persons aged between 15 and 59 or 64 years. In developing countries, the working age population is not so easily defined. Education is not necessarily compulsory, and child labour is a reality even if it is not well measured. There is no official age of retirement for large portions of the population(the self-employed in particular).

- *The labour force participation rate (LFPR)* is the percentage of the labour force over the working age population.

2.2. *Discussion*

Although it seems easy to define the economically active population, there are great variations in the way countries include, or do not include, unpaid family work, self employment, domestic activities and women's activities in general. In practice the EAP or the labour force often refer to those engaged directly in paid employment.

The labour force participation rate varies according to the age, the gender, the educational level of the persons, the country, its level of economic development, the proportion of the population living in urban areas, the salary level and the country's dominant culture.

The male participation rate varies very little except that there is a certain tendency of the LFPR for the 10-24 age group to decrease, as a result of schooling. The female LFPR on the other hand varies a great deal according to the above mentioned criteria, and the definition of the labour force (this definition can vary from one census to another). The increase in female labour force participation is in many countries one of the main source of increase in the labour force. The increase in the female educational level tends to increase their LFPR.

3. Employment and unemployment level

3.1. *Definitions*

- *The employed* comprise all persons who on a specified day or for a specified week were in paid employment or self employment, including the unpaid family worker.

- *The unemployed* comprise all persons who during a specified period were not employed and had no job but actively seeking work for pay or profit. It includes persons actively seeking work for the first time.

- *The unemployment rate* for a specific group refers to the number of unemployed in this group over the group's labour force.

3.2. *Analysis*

The unemployment rate should be analysed by age, gender, and educational level. The factor influencing the unemployment rate will be discussed in a specific lecture on this subject.

As important as unemployment is the problem of under employment.

Underemployment exists when persons in employment who are not working full time would be able and willing to do more work than they are actually performing at present (ILO 1984).

Underemployment is of two types: visible and invisible.

Visible underemployment means working less than a certain number of hours per year (desired or considered normal or appropriate).

Invisible underemployment exists when more people are engaged in a certain activity than would be needed to produce the output which they produce (Monly and Costa: 1981). Their earnings are abnormally low and their jobs do not permit full use of their capacities or skills. Underemployment of the educated is a serious problem in many of the developing economies.

4. Employment structure and structure of the labour force

4.1. *Classification*

Employment and the labour force are often analysed in terms of:

- *Sector of activity*

  The employed are classified according to whether they work in the primary sector (agriculture and mining), the secondary sector (manufacturing, electricity, gas and water) or the tertiary sector (commerce and service).

- *Industry*

According to the International Standard Industrial Classification of All Economic Activities (ISIC), the major divisions of industries are:

- Agriculture, hunting, forestry and fishing
- Mining and quarrying
- Manufacturing
- Electricity, gas and water
- Construction
- Wholesale and retail trade, restaurants and hotels
- Transport, storage and communication
- Financing, insurance, real estate and business services
- Community, social and personal services
- Activities not adequately defined

- *Status*

ILO distinguishes six categories (ILO 88)

- *Employer*: a person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires one or more employees.

- *Own account worker*: a person who operates his or her own economic enterprise or engages independently in a profession or trade and hires no employee.

- *Employee*: a person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece-rates or pay in kind.

- *Unpaid family worker*: a person who works a specified minimum amount of time (at least one-third of normal working hours), without pay, in an economic enterprise operated by a related person living in the same household.

- *Member of producers' co-operative:* a person who is an active member of a producers' co-operative, regardless of the industry in which it is established.

- *Persons not classifiable by status*: experienced workers with status unknown or inadequately described and unemployed persons not previously employed.

- *Occupation.*

The International Standard Classification of Occupations has been adopted by ILO in 1958 and revised in 1968. Given all the criticisms raised by the classification which was generally considered as not adapted to developing countries, it has been further revised in 1987. The new ISCO classifies the persons according to the tasks he/she performs. The main criterion used to define groups and sub-groups has been the skill requirements i.e. the

skill level and the skill specialization. The former 1968 ISCO which inspired most censuses identified ten groups as follows:

0/1	Professional, technical and related workers.
2	Administrative and managerial workers.
3	Clerical and related workers.
4	Sales workers.
5	Service workers.
6	Agriculture, animal husbandry and forestry workers, fishermen and hunters
7/8/9	Production and related workers, transport equipment operators and labourers.
10	Workers not classifiable by occupation and members of the armed forces.

4.2. *Analyses which can be carried out*

The structure of the labour force can be analysed in the following way:

- by sector of activity;
- by status;
- by industry;
- by occupation;
- by industry and occupation;
- by industry and status.

To highlight the relationship between education and employment, it is useful to analyse the labour force:

- by sector and educational level;
- by industry and educational level;
- by occupation and educational level.

It is useful to compare the structure of the labour force for different years (how it evolved over time) and between countries at different levels of economic development.

- It is generally believed that a country's structure of employment is a function of its level of economic development. One does notice that the process of economic development is associated with a gradual shift of the work force from the primary sector to the secondary and tertiary sectors, from self-employment to wage employment and that the proportion of scientific and technical personnel in the overall employment increases with the GDP

per capita. In spite of such "heavy trends" however, variation in the employment structure of countries at similar level of development can be observed which reflects their specific economic structure, the role of the public sector in their economy and their history in terms of educational development.

- The educational structure of the labour force is as much a function of the country's past education policy than of its level of economic development. The fact that the labour force is educated can in turn influence the structure of employment (supply effect).

- There is no fixed correspondence between education and employment and the educational level of people employed in one occupation vary in time and between countries. The education profile of an occupation depends on the demand and supply on the labour market.

Any further analysis introducing age, sex and income level as additional variables would help refine the analysis of the relationship between education and employment.

EXERCISE

DIAGNOSIS OF THE "EDUCATION EMPLOYMENT" RELATIONSHIP
THE CASE OF COUNTRY X

I. Working-age population, labour force and labour force participation rate

The economically active population or labour force comprises all persons of either sex who furnish - or would like to furnish - the supply of labour for the production of economic goods and services. It includes employed and unemployed persons and excludes students, women purely occupied in domestic duties, retired persons, etc.

1. Complete Table 1.

2. Analyzing Tables 1 and 2, state a number of factors which influence the labour force participation rate of men and women (and therefore the size of the labour force).

3. To what extent can education influence the labour force participation rate.

4. How do you explain the evolution of the labour force participation rate between 1981 and 1991.

Table 1: Working-age population, labour force and labour force participation rate by sex, 1981.

	TOTAL	MALE	FEMALE
1. Working-age population (10 years old and over)	9354	4839	4515
2. Employed population ('000)	3649	2838	811
Unemployed population			
3. Unemployed actively seeking work	504	306	198
4. Unemployed not actively seeking work	335	168	167
5. Sub-total unemployed (3+4)	839	474	365
6. Labour Force (2+5)	4488	3312	1176
7. Labour force participation rate (6/1)	47,9%	...	...

Table 2 : Labour force participation rate by age and sex, country X 1991 (in %)

Sex/age	10-14	15-19	20-24	25-34	35-44	45-64	65 & over	TOTAL
TOTAL	4.0	29.9	57.8	63.6	62.6	50.4	20.9	44.4
MALE	5.5	40.4	78.7	91.5	93.5	79.9	37.8	64.8
FEMALE	2.4	19.0	36.8	35.2	30.5	18.1	4.0	23.1

II. **Level of unemployment (1981)**

1. Complete Table 3.

2. Comment on Tables 3 and 4.

How would you define the situation of unemployment in Country X in 1981?

Who is primarily hit by unemployment (by sex and educational level)?

How does education affect: the chances of somebody being unemployed?

Table 3 : Unemployment rate by sex, country x, 1981

		TOTAL	MALE	FEMALE
1.	Total labour force (000')	4488	3312	1176
2.	Total unemployed population (000')	839	474	365
	Rate of unemployment (2/1 x 100)			
3.	Unemployed actively job-hunting (000')	504	306	198
	(3/1 x 100)			

Table 4 : Unemployment rate by educational level, 1981

Educational level	Total labour force 000'	Unemployed (000')	Unemployment rate
No schooling	941.6	100.9	10.7%
Passed grades 1-10	3154.4	614.7	19.5%
GCE "O" Level in 6 or more subjects	287.1	112.7	39.2%
"A" Level in 3 or more subjects	74.5	6.8	9.1%
Degree equivalent or higher	30.4	3.9	12.8%
TOTAL	4488.0	839.2	18.7%

III. Structure of the employed population

1. Structure of employment by status.
   Comment on Table 5.

2. Employment structure by industry.
   Complete Table 6 and comment. How would you describe the growth of employment between 1973 and 1981 and between 1981 and 1991? Which economic sector employs the most people? How did the situation evolve in this respect between 1973, 1981 and 1991?

3. Employment by occupations and the occupation/industry matrix.
   Analyse Table 7 and Complete Table 8. Comment on these tables: Which industry employs most qualified manpower (here: Professional/technical and administrative/managerial personnel) and how did the situation evolve between 1981 and 1991? Which factors can explain this evolution?

4. Employed population by educational level and occupation.
   Complete Table 9 and make general comments. How does the educational profile evolve with the occupation? Is there one typical educational level for each occupation? If not, could you make some suggestions on how to break this big occupational categories into more homogeneous ones as far as education is concerned. Do you think it feasible to define occupations perfectly homogeneous as far as their educational profile is concerned? Why not? Given what you have seen regarding the level of unemployment of school leavers, how is the educational profile of each occupation likely to change in the future?

5. Which information would be available in your own country?

Table 5 : Composition of the employed population by employment status and occupation (in %)

	Paid employee	Employer	Self-employed	Unpaid family worker	TOTAL
Professional & technical workers	93.2	2.2	4.4	0.2	100.0
Administrative & managerial workers	89.5	7.2	2.8	0.5	100.0
Clerical workers	99.2	0.3	0.4	0.1	100.0
Sales workers	45.2	18.7	33.2	2.9	100.0
Service workers	88.5	2.8	6.6	2.0	100.0
Agric. workers	49.8	1.4	39.7	9.1	100.0
Production workers	87.7	2.7	8.8	0.8	100.0
TOTAL	66.6	3.1	25.0	5.2	100.0

Table 6 : Employment structure by industry : Evolution from 1973, 1981, to 1991

	1973		1981		1991	
	(000)	%	(000)	%	(000)	%
Agriculture	1693	53.27	1829	50.11	1876	45.53
Mining & qua.	10	0.31	13	0.36	34	0.83
Manufacturing	313	9.85	349	...	425	10.32
Construction	86	2.71	104	2.85	134	3.25
Commerce	268	8.43	344	9.42	437	10.61
Transport	133	4.19	179	...	200	8.45
Finance	20	0.63	25	...	57	1.38
Services	655	20.61	807	22.11	957	23.23
TOTAL	3178	100.00	3650	100.00	4120	100.00

Table 7 : Employment structure by industry and occupation in 1981

	Professional/ technical	Admin. & managerial	TOTAL
Agriculture	1904	475	1828977
%	0.1	0.0	100.0
Mining	127	51	13079
%	1.0	0.4	100.0
Manufacturing	4986	2130	348972
%	1.4	0.6	100.0
Construction	2485	255	103561
%	2.4	0.2	100.0
Transport	2738	979	178876
%	1.5	0.5	100.0
Commerce	2132	2526	343768
%	0.6	0.7	100.0
Banks & Finance	3292	1157	24945
%	13.2	4.6	100.0
Services	160824	6344	806693
%	19.9	0.8	100.0
T O T A L	178508	13924	3649571
%	4.9	0.4	100.0

Table 8 : Employment structure by industry and occupation in 1991

	Professional/ technical	Admin. & managerial	TOTAL
Agriculture	1283	1476	1875828
%	0.1	0.1	100.0
Mining	193	151	33814
%	0.6	0.4	100.0
Manufacturing	8639	8522	424715
%	...	2.0	100.0
Construction	5670	2322	133968
%	...	1.7	100.0
Transport	3853	2201	199574
%	1.9	1.1	100.0
Commerce	3117	5400	437318
%	...	1.2	100.0
Banks & Finance	6613	4939	56927
%	11.6	8.7	100.0
Services	217016	8675	957211
%	...	0.9	100.0
T O T A L	246384	33686	4119355
%	...	0.8	100.0

Table 9 : Disuribution of employees by occupation and educational level, 1981

OCCUPATIONS	Educational attainment					TOTAL
	University degree	A level in 3 or more subjects	O level in 6 or more subjects	Grade 1-10	No schooling	
1. Prof./tech.	22296	57004	44039	47665	7484	178488
%	12.5	...	24.7	26.7	...	100.0
2. Adm/manager	2207	838	3070	6770	1032	13917
%	15.9	...	22.1	48.6	...	100.0
3. Clerical worker	2539	4624	55632	113220	10129	186114
%	1.4	2.5	29.9	60.8	5.4	100.0
4. Sales & service	624	1295	23542	371282	73502	470245
%	0.1	0.3	5.0	79.0	15.6	100.0
5. Agricultural worker	607	1293	15779	1182151	582304	1782134
%	0.0	0.1	0.9	66.3	32.7	100.0
6. Production worker	1250	1655	26377	755631	141578	926491
%	0.1	0.2	2.8	81.6	15.3	100.0
7. Others	952	1003	5975	58797	24729	91456
%	1.0	1.1	6.5	64.3	27.0	100.0
T O T A L	30475	67712	174414	2535516	840758	3648875
%	0.8	1.9	4.8	69.5	23.0	100.0

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Chapter 4

Education and the informal sector: an overview

by Boubacar Camara

Analysis of the interrelations between Education and the Informal sector is a crucial step in the overall study of socio-economic development in developing countries, especially in Africa. For more than three decades now, African societies have been experiencing tremendous difficulties related to the educational and economic policies being implemented. Since 1980, with the adjustment programmes progressively extended to most African countries, socio-economic imbalances have been aggravated by the negative effects of both policies and the international environment.

With respect to the present critical situation, there is an urgent need not only to understand the interrelations between Education and Development, but moreover to define innovative development strategy giving due consideration to the informal sector, and to the development of diversified human resources through education.

1. Education: new contents and role in development

The crisis of the education systems in Africa constitutes a basis for the definition of new contents more relevant to development. Research in this area is not specific to the continent. At world-wide level, educational specialists and actors are trying to identify the key elements of a new education which can help in solving problems of human resources development, and global development.

The Jomtien Conference on Education for All held in March 1990, stands as an important event which resulted in the adoption of the World Declaration on Education for All, and the Framework of Action to meet basic learning needs. The concept of basic education including formal, non-formal and informal education activities has been clarified.

For human resources development, in particular in developing countries, basic education is a fundamental development factor. In countries where the illiteracy rate is high and the enrolment ratio low, such as Sahelian countries, basic education for the development of the society is a first priority.

This type of education must provide a minimum of knowledge, know-how for better understanding of/and interaction with the environment, for improving education and training and for more efficiency in participating in the socio-economic and cultural development of the society.

Education is not only for modern formal sector of the economy ; Education is the common base for all sectors of the economy and society. The interaction of the various types of education and the various sectors of activity appears as a key element in understanding

the problematic of development, notably in developing countries. The systemic approach, which is a dynamic and integrated approach, will help in finding the major trends and factors leading to the development of all sectors and to social progress. The informal sector as a significant part of the socio-economic system in Africa will benefit from education and particularly from basic education for all.

2. The nature and role of the informal sector

In Africa there is a long tradition of small scale production activities. Before the colonial period, several activities such as metal work, weaving, leather work, jewellery, commerce of different kinds, have been undertaken in order to meet social demand.

With the advent of the colonial era, modern activities were introduced: oil factories, mills, storehouses, manufacturing, public administration, new types of management, etc. These activities which form what is called the modern sector have evolved according to a great number of factors: political, cultural, social and international.

The post colonial period is characterized among other things by the existence of a modern sector which is limited in term of jobs and active population, and a widespread sector called the informal sector covering the majority of the active population, more than 70 per cent in most countries of the continent.

What are the characteristics of the so-called informal sector?

In fact, the informal sector is not so informal as it is called. This sector has its own dynamics, its own laws of evolution. The complexity of the sector due to the diversity of the activities, has led to the use of a simplified name: informal sector. One can say, that the informal sector has always existed. It preceded the modern sector. Moreover, the informal sector contributes a great deal in meeting the needs of the population. More than 80 per cent of social demands in many developing countries are dealt with, within the informal sector.

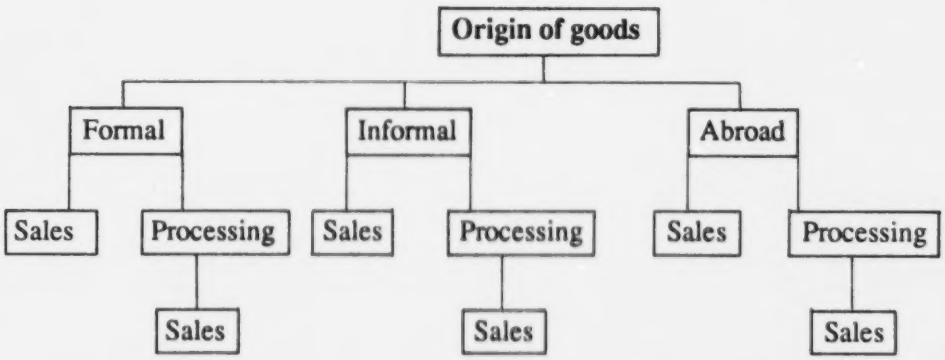
This fact is mainly explained by the competitiveness of the informal sector in various activities: it provides cheap and appropriate goods especially in rural areas and sub-urban areas regrouping more than 80 per cent of total population in African countries.

The structure of prices in the modern sector is often so rigid that the final price is unaffordable for many people. The informal sector is playing several kinds of roles within the socio-economic system.

A sector which is complementary to the modern sector

As the modern sector is not sufficiently developed to meet all the needs of society, the informal sector tends to fill the big gap in providing numerous products and services. Processing activities and commercial activities are an important component of the informal sector.

To develop these activities, the informal sector needs inputs from the formal sector, from abroad, but also from its own production. The following diagram shows some indications of the functioning of the informal sector. For example, the output of the mills factory can be used by the informal sector for bakery, poultry and cattle breeding, etc. In some cases the informal sector behaves like a retailer, in other cases, it behaves like a manufacturer -- by processing crude material and semi products. The same situation appears with inputs from abroad. Nowadays, many goods from new industrial Asian countries are commercialized through the informal sector: clothes, toys, knives, lamps, etc.



Even if the informal sector has a complementary function to play, it is also competing with the modern sector particularly in the area of clothing. The import of clothes has an impact on local industry. This competition must be taken into account in the search for a solution to the development of both the informal sector and local industry. The competition within the informal sector is another contradiction. The commercialization of ready-made clothes affects to a certain extent the activities of local tailors and dressmakers.

A sector which is supporting the modern sector

Building activities of the informal sector constitute an important contribution to the development of the modern sector. In West African countries, most houses are built by workers of the informal sector. The comparatively low cost of construction in the informal sector again explains the role played by this sector in meeting construction demand. Very often, for large buildings, bricklayers of the informal sector are given specific subcontracts. The construction sub-sector is a dynamic component of the informal sector.

The car repair sub-sector represents another crucial area which reflects the support of the informal sector to the modern one. Vehicles of the modern sector are generally maintained and repaired by garages of the informal sector in most West African countries. This activity has a great impact on the market for spare parts. There ar other activities showing the support of the informal sector to the modern sector such as retail activities, rubbish processing, etc.

A sector with great saving capacities

In the informal sector, according to the types of business, individuals co-operate in order to save money for short term investment.

This informal banking system has great advantage since it is based on a spirit of solidarity among members of the group. Especially among businesswomen of the informal sector, this type of saving mechanism is used continuously. Even for women at home, a similar system is set up among friends and relatives, and periodically one of several members receive the total amount of money collected. The actual amounts depend on the financial power of members of the group, in some cases millions of francs are dealt with at each meeting.

Obviously, the modern banking system, is interested in recycling the considerable liquidity within the informal sector. Efforts are being made to link the informal saving mechanism and the modern banking system through the opening of accounts. But it is not an easy task. There is a great deal of confidence in this mechanism.

One can say that the informal sector often looked at as a backward sector has huge potential for the overall development of society. The modern sector must learn a lot from it. But to get dynamic and fruitful interaction, the informal sector must be supported in improving skills, managerial capacity and the cultural level of its actors.

3. Education and training requirements of the informal sector

Paradoxically, in the new informal sector, all levels of education are present. This is due to the negative effects of the socio-economic crisis on modern activities and modern employment. More and more graduates are unemployed and have no choice. Self employment becomes a matter of survival. The graduates or post graduates of the informal sector are undertaking activities which do not require such a high level of education. From a technical point of view, they are prepared to manage their business and to take advantage of several facilities of the modern sector such as credit.

However, for the majority of the informal sector in West African countries, workers are illiterate. The need for basic education is an urgent one. Non-formal education activities in the informal sector are strongly needed, which must be integrated, in productive activities and skills improvement. An example of this is the programme of the International labour Office which is implementing small scale projects in several countries: Togo, Rwanda, Mali to help tinsmiths, and other manufacturing activities. Education is part of the support programme.

But efforts have to be intensified since there are increasing needs for basic education, in relation to the growing number of primary school and secondary school leavers and to the rural exodus. Education authorities should elaborate appropriate strategies to help the informal sector in the area of relevant non-formal education.

In the process of the follow-up of the World Conference on Education for All, Plans of action on a long term basis are being prepared. It is necessary to give due priority to a sector with such a development potential for society. Moreover, co-operation within the informal sector must be initiated and supported. Available human resources in the informal sector will play a significant role in contributing to the education of other actors of the sector. A new partnership in the informal sector and between the modern and the informal sector should be set up and developed in order to overcome the present crisis that has lasted too long.

Chapter 5

Training issues in the informal sector with special reference to Cameroon

by Joseph N. Ngu

I. Introduction

The objective off this paper is to summarize our knowledge of the informal sector and to discuss training issues that could be designed to improve the knowledge, skills, and income of artisan craftworkers and small entrepreneurs, including the floating army of the unemployed that is usually found in this sector in Cameroon. Such an exercise is not without importance. One of the major challenges facing Cameroon in the coming years will be how to master the dynamics of the informal sector, now emerging as a key element in the current Structural Adjustment programme (SAP). Since the beginning of the economic crisis in 1986, it has become increasingly clear that the government's resource constraints are having serious adverse effects on the implementation of the country's development programmes and that the economy cannot return to a sustained growth path without major structural reforms which will have implications for the informal sector.

Unfortunately both the analytical framework and empirical data required to understand the dynamics of the informal sector and to develop effective training strategies and policies are lacking. In addition, we lack a true familiarity with and understanding of this sector because we are not 'rue natives' and not being indigenes we fail to see the importance of including informal (urban and rural) activities as a separate and distinct sector for analytical purposes. For academic analysts, the hope is that the transitory nature of the sector will disappear with the advent of development, and hence little or no systematic outside help has been directed towards it. The present paper is an attempt to provide a descriptive profile of the informal sector and to discuss the educational and training needs of the sector. But before we do this a brief review of the Cameroonian economy is necessary to put into perspective our main topic, the informal sector.

II. A review of the Cameroon economy

Between 1977 and 1985, Cameroon experienced a rapid rate of economic growth based primarily on oil production. Oil earnings enabled Cameroon to maintain a positive balance of payments and a balanced budget since the economic recession that ended in 1976. Before 1977, the growth sector in Cameroon was agricultural exports, mainly cocoa and coffee. Cameroon is also the sixth most important exporter of tropical hardwoods in the world and maintains significant forest reserves.

The investment of agricultural and oil surpluses in industry and infrastructure brought about a rapid rate of import substitution. Industry grew at a rate exceeding 16 per cent in real terms from 1980 through 1985, led by oil (25 per cent) and manufacturing (22 per cent). According to recent review by the World Bank, manufacturing increased its share of GDP from 8 per cent of value added in 1980 to 15 per cent (and about 7 per cent of employment), in 1988, with most of the growth coming from new foreign investments and government owned enterprises. Manufacturing is varied but generally medium-sized with most sectors dominated by a few large capital-intensive firms concentrated in producing high-cost import substitutes, agro-industrial exports, wood -- based exports, aluminium and consumer goods. These goods are targeted towards the local market and for exports within the central African region (UDEAC States).

Services, including commerce grew more modestly at 6 per cent and accounted for 36 per cent of the GDP in 1988. The World Bank was able to identify about 250 registered service companies which vary in trade (import-export, wholesale and retail) and dominated by small private firms who represent, distribute and provide back-up services and are owned largely by foreign firms with the participation of the National Investment Corporation (SNI). Marketing of food crops is the hands of small private traders, except for rice, and is efficient despite the high mark-ups due to transport costs. Marketing of exports is done by parastatals, or the private sector, depending on region and crop. Entrepreneurship in trade is largely Cameroonian.

The period of Cameroon's rapid growth came to an end in 1986. In that year the collapse of world prices for Cameroon's major export commodities, coffee, cocoa and petroleum delivered to the country a major terms of trade shock. Over three years, from 1986-1989, the price of her chief exports declined nearly 50 per cent (MINPAT, 1989). Between 1985 and 1988 the country's export earnings were also halved and tax receipts declined enormously. The depreciation of the US dollar with respect to other currencies made things worst as cameroon's exports are dollar denominated.

Since 1985 both industry and services have experienced a slump, with industry declining by 6.5 per cent in 1987 and by 10 per cent in 1988 and services by 5.4 per cent and then 13 per cent. As the shock waves of the crisis rolled through the economy, unemployment became a major problem ; for the economy as a whole, the unemployment rate is estimated at 15-20 per cent (Paul, J-J, 1987). In Yaounde and Douala, the two principal cities in Cameroon unemployment is at 30-35 per cent and 40-45 per cent respectively (USAID/CDSS, 1989). since 1986, the public and para-public sectors as well as the modern private sector have virtually stopped recruiting new workers. or the public sector the Structural Adjustment Programme (SAP) intends to improve the efficiency of that sector (reduce the over-extended civil service) as well as develop a market oriented and competitive private sector. Implicit in all of this is the fact that the informal sector will be looked upon to plan and increasingly important role in the process of a broad-based economic development of the country. But what exactly is the informal sector and how does it fit in the overall scheme of development. Before we examine this sector, it is important to review briefly the observe of the informal sector ... the formal sector.

III. A descriptive profile of the economy

III.1 *The formal sector*

The formal sector has received specific attention in all (six) five-year plans of the Government of Cameroon. Historically, similar bias was directed to it during the colonial era in terms of investment and infrastructural development. One consequence of adopting a state-led development model has been the tendency for the Government to become directly involved in the provision of a wide range of goods and services. Some of these goods and services are natural monopolies such as electricity (SONEL) and water (SNEC). The Government has also been heavily involved in the production of some private goods such as pulp and paper, fertilizer (up to 1988) in the commercial sector and wheat, sugar, cocoa, cotton and rice in the agricultural sector. What does all this mean in defining the formal sector?

The formal sector or its activities can be described as possessing the following characteristics (ILO, 1972):

(a) difficult entry;
(b) frequent reliance on overseas resources;
(c) corporate ownership;
(d) large scale operation;
(e) capital-intensive and often imported technology;
(f) formally acquired skills, often expatriate; and
(g) protected markets (through tariffs, quotas and trade licenses).

Some of the above characteristics may not be easy to determine clearly. For example, corporate ownership in Cameroon is frequently meant to be state ownership. If we examine each of the major economic sectors, we can determine the extent to which the activities in these sectors fall within our definition of the formal sector. In fact our description of the macro-economic performance of the country above was to a larger extent a description of the formal sector par excellence. However, to put the discussion in a contextual perspective, let us look at this again from a sectoral point of view.

A. *Petroleum*

The activities of this sector in Cameroon ca be described as completely within the formal sector. Petroleum is an important product of Cameroon. As a share of GDP it was the largest contributor for almost six years. In 1984 petroleum earnings represented 66 per cent of total export revenue and 48 per cent of central government revenue (NGU, 1989). The activities of this sector was assigned to a parastatal holding company, the Société Nationale des Hydrocarbures (SNH) in 1980 and since then production is carried out by a joint venture between SNH and foreign partners. We see then that the above characteristics apply to petroleum activities in Cameroon.

B. *Agriculture*

Before the advent of oil in 1977, agriculture was and still remains the engine of economic growth in Cameroon. The Breakdown of agricultural production is as follows (1983-1088 average).

Foodcrops	54 per cent
Export crops	21 per cent
Livestock	15 per cent
Forestry	9 per cent
Fisheries	1 per cent

Ninety per cent of agricultural production is accounted for by small traditional producers. The reminder (10%) is accounted for by large plantations, mostly government owned. The latter falls within formal sector activities.

C. *Industry and commerce*

We have already mentioned above that investments of agricultural and oil surpluses in industry and infrastructure brought about a rapid rate of import substitution industrialization. The result was that manufacturing enterprises that developed were dominated by a few large scale capital intensive firms concentrated in high-cost import substitutes. In modern large scale industry, employment is predominantly wage employment, a formal sector characteristic.

Commerce, however, is not completely in the formal sector. If anything, it is has a mixed bag of formal and informal participants. Although more than 250 registered companies vary from trade to trade (import-export, wholesale, retail), the marketing of food crops is in the hands of small private traders and these cannot be said to belong in the formal sector since to become a trader is easy with little capital, self-ownership, little technology and any visitor to our local markets can attest to its competitive and unregulated nature.

The state hold a large stake in the banking sector as an instrument of its policy of firm control over the monetary system. so while the formal banking system is reeling from severe liquidity problems, private credit associations which are mostly tribal rather than class oriented and locally known as 'Njangis' or 'tontines' are having a field day in terms of membership and the supply of credit within the informal sector. In the transportation service (a) similar dichotomy exists with the bush taxis or 'clandos' providing the only bridge between rural and urban areas.

D. *Health and education*

These services are provided for mostly by the state and private religious bodies. Even traditional medical men have been organized into an association by formalizing and standardizing their services.

III.2 *The informal sector*

At the conceptual level, the informal sector may be defined as comprising those enterprises which have in common one major and dominant attribute: official non-status (AMIN, 1990). The popular view of informal sector activities is that they are primarily

those of petty traders, street hawkers, shoe-shine boys and other groups 'underemployed' on the streets of major towns (ILO, 1972. According to the International Labour Organization (ILO), informal activities are ways of doing things, characterized by:

(a) ease of entry;
(b) reliance on indigenous resources;
(c) family ownership of enterprises;
(d) small-scale of operation;
(e) labour-intensive and adapted technology;
(f) skills acquired outside the formal school system; and
(g) unregulated and competitive markets.

Given the above definition and characteristics, it will be useful to begin by distinguishing two main categories of the informal sector in Cameroon. Since nearly all types of goods and services are produced in this sector, we may call one the traditional sector where the industries in it are based on traditional skills and traditional techniques. They differ from the modern informal sector industries by their technology. The other category may be referred to as the modern informal sector. The industries here differ from those of the modern large scale industry mainly in the size of their operations. In technology they are on a par with or nearly approximate to the modern large-scale industries.

The traditional informal sector may be further divided into two classes. In one we find the village type industry, while the other we may refer to as the handicrafts industry. The essential feature of handicrafts is the highly skilled craftsmanship of the individual artisan. The handicrafts industry in general produces goods not for common consumption, but serves the highly selective and sophisticated tastes of the better off classes. In Cameroon, the main problem facing the traditional handicrafts is lack of demand for their products ; this is why we find in our hotels, airports, and certain designated areas of our main cities the sales of these products to mostly foreigners and tourists.

The other type of industry within the traditional informal sector may be referred to as village industry. The village (cottage) industry produces consumer goods mainly to satisfy the demands o the common people. The characteristic feature of this class of industry is not the location (i.e. they are found in the urban and rural non-farm sectors), but the traditional technology it is based on. This technology is backward in the sense that the productivity of the persons engaged in village industry is very much lower than the productivity of persons engaged in the modern counterpart of the same industry. This is so because much less capital is used than its modern counterpart, but more labour is employed per unit of output.

The modern (usually urban) informal sector falls in to a completely different category. The industries in it are small scale, usually family owned; the skills are acquired both in the formal and outside the formal school system; they often rely on indigenous resources and usually participate in very competitive markets. since modern technology is found within the modern informal sector, the employment potential of the small-scale modern industry is not much different from the one in the large-scale counterpart of the same industry. From the point of employment, small-scale industry offers much greater scope for self-employment. Hence the many small-scale enterprises that litter our urban areas are usually owner-operated. In the modern large-scale industry, employment is predominantly wage employment. Even for trade and related services within the modern

informal sector, the street hawkers, petty traders, food sellers (the buy'em-sell'em) are in most cases working for themselves.

The modern informal sector contains basically two classes of industries. Small-scale operations exist for the production of consumer goods while other small-scale enterprises produce intermediate and light capital goods either directly or as subcontractors to serve the needs of formal large-scale industries. From the point of view of structure, location and organization, the principal feature of the modern (urban) informal sector is the possibility of industries and enterprises in it to be dispersed in many locations and more importantly, the linkage of this sector with the formal sector.

Although comprehensive data do not exist, an examination of available evidence reveals that there is extensive activity in the informal sector. In Yaounde, for example, an ILO study (1977) enumerated some 32,842 informal economic units. If we include wage-earners and apprentices who were also engaged in informal activities on a part-time basis, however, the magnitude of this sector becomes even more striking. In the Yaounde study it was estimated that at least one quarter of the economically active population were engaged in informal activities. Remarkably similar results were obtained recently by Tchamago and Nyobe (1990) in their survey of Douala and Yaounde. According to them 27 per cent of the average adult is working time in Douala and 27 24 per cent in Yaounde were spent in informal occupations.

There are, however, seasonal variations in informal sector activities, especially in secondary towns and villages. Although the data is lacking, the impression is that there is fluidity of labour between informal urban (and especially rural) activities and farm labour and this varies according to the ecological zone. There is more movement of informal activities into farming activities in the rainy season in the southern part of Cameroon, the period of peak demand for farm labour, than elsewhere.

From the fragmentary data on the economic activities of the informal sector in Cameroon and from the earlier categorization of the sector, the most important occupational activities in the modern informal sector are metalworking, building, mechanical repairs and sales workers (traders) while for the traditional informal sector, they are craftworkers and production process workers. The 1977 ILO survey indicated than men were predominant (95 per cent) in the metalworking, building and mechanical repairs activities while 65 per cent of the traders were women. In the sales offood, women predominate with an average of about 90 per cent. However street hawking and door to door sales are almost always undertaken by young men. he differentiation by sex is about equal between men and women for craft-workers and production process workers.

The production process workers are those involved in the production or provision of goods and services for local markets. There are artisans engaged in either manufacturing activities (involving the transformation of raw materials into finished material) such as leather working, cloth-working, wood-working and food processing, or service activities, such as electrical, automobile, and other repair activities, laundering, photography, tailoring. Women and men are equally represented in both tailoring and in hairdressing.

The informal sector (traditional and modern) is expanding with respect to both employment and capital investment. However, the rate of expansion is slow, partly because of their size (a typical unit of firm employed 3.8 workers, a figure that is inclusive of both

apprentices and proprietors) and also because the technical and financial management of these undertakings is still at the rudimentary stage and with added pressures from the recent economic crisis which is not only depressing wages but also paid employment in general. However, we can say that the informal sector far from obstructing the modern formal sector, performs an important training and income generating function.

The labour used by the informal sector entrepreneur consists of both paid employees and apprentices; the majority of workers are apprentices. Another related characteristic is that some of these apprentices are related to the proprietor ... a source of cheap labour.

One of the characteristics of the informal sector was that its operations were usually small-scale. the amount of physical capital used was very small. About a third of informal operations in the Yaounde survey were housed in temporary workshops constructed of palms and sticks or old scraps of metal. The remaining had no permanent structures (some were in the open air such as motor car garages).

The informal sector at present provides employment for craftsmen, entrepreneurs, and graduates of educational institutions who cannot find work in the private formal sector. The public and para-public sector has stopped hiring new workers since 1987 and there is no evidence that the private formal sector has been actively recruiting new workers. The modern informal sector in Yaounde and Douala provides employment to the equivalent of a fifth of the workforce in the formal sector throughout the country without the benefit of resources invested in large scale corporations. the informal sector has little capital and its technology is sometimes rudimentary. It employs workers whose education are sometimes obtained through on-the-job training and sometimes from formal institutions. all of this means that the sector has very limited room to manoeuvre and does not seem to have any clear indications of its prospects for the future. Our main thesis is that during this period of austerity, the informal sector will be increasingly looked upon to perform a more important training, employment and income-generating function than it has so far done. since the composition and characteristics of the members are constantly changing (especially if new entrants are young and educated), it becomes urgent to ask whether or not here should be intervention in the sector in terms of education and training. Although AMIN (1990) and other studies of workers of the informal sector seem to suggest that the participants do not need training to survive in that sector, I do not believe that the sector should be left to itself. It is to this topic that we turn below.

IV. Education and training in the informal sector

Two major issues stand out concerning education and training in the informal sector: firstly, how does training (and what type) contribute to employment and productivity in the informal sector? Secondly, what policy options have the most promise? Since we have already pointed out that the economic crisis now facing Cameroon and the adjustment process currently underway is leading to contraction of employment in the public and private sectors, the burden of employment (and the provision of training) is now being shifted onto the shoulders of the informal sector itself. any assistance or interventions in that sector must therefore be based on a policy of flexibility of training options and the changing composition of the clients which must take into account the ad-hoc and pragmatic nature of how the sector operates.

IV. The Training needs

The education and training needs of the informal sector are as numerous and diverse as there are economic units in the sector. These needs again differ depending on the category or the sub-sector of the informal sector. It should be pointed out that within each sub-sector the training needs may differ largely because the educational levels of participants also differ although it must be emphasized that the levels themselves are more homogenous or the traditional or crafts sub-sector than for the modern (workshop, commerce and service) sub-sector.

For the purpose of clarity, the educational needs of those within the informal sector as a whole can usefully be grouped under two main headings (Commbs and Ahmed, 1974).

(1) *General or basic education*: reading, writing and calculating, an elementary knowledge of science and one's environment, etc. what primary and general secondary schools seek to achieve.

(2) *Occupational education*: designed to impart particular knowledge and skills associated with various economic activities useful in making a living.

The main hope for increasing informal employment, productivity and broadening the distribution of income lies in the growth of small and medium-sized enterprises. employment here will mostly be of the self-employment type as apprentices become owners of their own enterprises. They will need workers and other apprentices in turn. While increased demand for traditional skills (e.g. tailoring and dressmaking, masonry and carpentry) often can be accommodated by indigenous training, modern technologies (e.g. food processing, repair and maintenance of machines, motor vehicles, radio and televisions, electrical equipments, etc.) must be created by new training processes. A good example is the Cameroon Opportunities Industrialization Centre (OIC) located here in Buea. This is a non-formal vocational training programme which prepares graduates for employment and self-employment. Fluitman's (1989) recent classification of informal sector enterprises and their work and training needs is useful and is illustrated in the table below.

Apart from *Fluitman's* classification, Amin (1990) has extended it by looking at certain specific variables of informal workers. These include the ages, sex, migratory and educational characteristics of these workers. His research has shown that substantial differences exist among the workers' sub-sector in each o these variables, consequently their training needs are likely to differ.

As shown in table II below, the training needs of youths are often different from those of adults, and again depending on the sub-sector, those of men may be different from those of women. While youths may be more amenable to institutional training to acquire certain basic and educational skills, it may be difficult for adults and the elderly to be 're-educated' through formal institutional programmes. Here we note (especially in the case of Cameroon, the dismal results of adult literacy programmes or 'adult primary schools !'). In addition, the educational and training needs of adults might be different given that they have different educational levels and work experiences. The recent demographic pressures on this sector (many are former formal sector employees) will require an exhaustive research of available skills and needs.

Table 1. **Categories of the informal sector enterprises and their work and training needs**

A. ENTREPRISES CATEGORIES		
1. The Craftsubsector (eg. artisans, handicrafts, home-based work of women)	Marketing and accounting skills	Rationale being that owner-artisan may have advanced on the basis of technical (sometime even inherited), rather than business skills
2. The workshop subsector (eg. metal work-shops, furniture making enterprises, electric/electronic repairing, printing press)	Adaptation and modernization of technology and production process	Should be structured around on-the-job activities for absorbing in the prevailing work mode
3. Commerce and services (eg. petty trading, shop keeping, repair services etc.)	Marketing and management	Lack of capital and credit, not training, is seen as a major obstacle
B. WORKFORCE CATEGORIES		
1. Entrepreneurs (owners of small establishments, often also the principal workers)	Managerial and marketing skills ; also technical skills depending on the nature of the enterprise	Establishing access to credit, capital, demand sources for products and services and replacing outmoded technologies
2. Establishment workers (wage-earning employees, apprentices, unpaid family workers)	(1) Complementing and strengthening technical skills in respective area of specialization (2) Entrepreneur-ship development for those who have already set their minds to become a self-employed or owner of an enterprise	Should complement rather than replace the prevailing apprenticeship system and indigenous work techniques.

SOURCE : FLUITMAN (1989) adapted by AMIN (1990).

Table 2. **Some characteristics and training needs of informal sector workers**

Classification based on workforce characteristic	Nature of training needs	Remarks
A. *Age characteristics*		
1. Youths (lees than 25 years)	Marketing and accounting skills, literacy may be necessary (non-formal education programmes)	Most urban youths already have been to schools (drop outs)
2. Adults (25-44 years)	Marketing and management skills (short intensive programmes)	On-the-job training (mostly for self-employment and credit)
3. Elderly	Management and accounting skills depending on the nature of the enterprise	Provision of start-up capital for the self-employed very important
B. *Sex characteristics*		
1. Male	Marketing, accounting and managerial skills; also technical skills depending on the nature of the enterprise	Establishing access to credit, capital for expanding business
2. Female	Basic education and occupational education and training depending on the nature of the enterprise	After basic education, access to credit and capital is very important to women in this sector
C. *Migratory characteristics*		
1. Recent migrants	Training is necessary to adopt to the urban environment and establish contact for business purposes	Vulnerable to exploitation if no communication support is in place
2. Circular migrants	Training needs are not clear	Advantage of taking the training to rural areas
3. Long-term residents	Training in specialized skills and technique	Could be used as trainers
D. *Educational characteristics*		
1. Illiterate	Training in literacy and numeracy; adult education programme apart from training in respective line of work	Should be a priority item
2. Primary school drop outs and those with primary level of education	Institutionalized training still may not be possible On the job training may be the solution	Should not be difficult to organize
3. Secondary and higher secondary graduates	Institutionalized training, as relevant for the informal sector could be feasible	Entrepreneurship develop-with this group could be productive

Source: Amin (1990 pp.30-31).

From table 2, we also note that recent migrants may at the beginning of their stay need to be sensitized to urban politics and to adapt to new environments while long term residents' needs may be mostly job-specific training.

Traditionally, assistance for the development of the informal sector has been provided through the establishment of special (usually state-run) agencies. By their very nature, these institutions are not really adapted to the dynamics of the informal sector. However, certain specialized programmes to provide young people with employable skills such as Thailand's Mobile Trade Schools, Kenya's Village Polytechnics (Coombs and Ahmed, 1974), or to upgrade or broaden the skills of practising artisans, craftsman and small entrepreneurs (e.g. Cameroon OIC-Buea) have registered some very positive results in terms of self employment and productivity (USAID/CDSS, 1989). Given the heterogeneous nature of the informal sector, what types of recommendations will satisfy the needs of those in his sector? After making some pertinent concluding remarks we highlight some specific recommendations in the final section that follow.

IV.2 *Concluding remarks and recommendations*

Cameroon's informal sector appears to offer an employment and training potential that our national policy-makers cannot afford to ignore. Although the importance of this sector and its productivity are high, the research base is weak and only impressionistic and educated guesses seems to have guided policy options and assistance to it. Therefore, it necessary to act cautiously in terms of intervention and assistance which must be based on effective monitoring and research.

The evidence for or against intervention is mixed (again a need for systematic research). In examining the characteristics of the informal sector, we pointed out the unregulated and competitive nature of its markets. The oft-recommended solution by the State (and outsiders) to create credit facilities and inject capital into this sector in order to promote rapid business expansion is no more than an attempt to regulate and formalize the informal sector. since this sector is assumed to operate in a relatively freer environment, such intervention must be well tailored to meet popularly expressed needs and be monitored continuously. Any sudden injection of capital, for example, would probably encourage the accelerated development of a few privileged enterprises, penalizing small undertakings whose share of the market is likely to reduce (one again the effects of the green revolution syndrome!). Government support for this sector is best furnished by reducing or eliminating regulatory and policy constraints on informal sector enterprises which can help create employment and through the provision of credit that benefits all in the sub-sector.

Concerning training needs we see from both tables I and II that the additional skills required in the informal sector are not complex or abstract. They are mostly marketing and accounting skills for the crafts and commerce sub-sectors and technical skills for those in the workshop sub-sector. Assistance in these areas therefore will have to focus on supportive and innovative help in the solutions of day-to-day problems (in terms of production and techniques, etc.) and be adapted to the needs of the sector.

But which policy options have the most promise ? Higher priority should be given to policies which make use of the existing training capacities than those which require new

structures to be created. The fragmentary evidence that exists point to the fact that basic education can improve informal sector productivity. The local provision store worker or owner, the fruit and vegetable seller, the roadside mechanic, the masonry and fish seller will all increase their sales if they possess a basic education and can take advantage of new local non-formal occupational educational projects.

There is also evidence that employment in the informal sector is the common training ground for informal sector activities. The educated self-employed are likely to benefit from short intensive programmes offered by formal training programmes with the proviso that these are relevant to the trainees and do not impinge on the smooth running of their enterprises.

As we mentioned above, sponsored interventions for training for the informal sector are risky and should be carefully monitored and evaluated. When only skill training is provided, such training is likely not to be effective. It should be associated with some form of wage employment or the provision of credit or start-up capital for self-employment. Training alone is not enough.

Finally, in the Cameroon, specialized institutions are needed that are comparatively autonomous and flexible, yet accountable in the medium term for results. An outstanding example is Cameroon's Opportunities Industrialization Centre -- Buea, a non-formal vocational training programme sponsored by the United States Agency for International Development (USAID) which is proving effective in delivering training support in the informal sector. This programme should be supported by other international organizations and private voluntary organizations and should be expanded to include other provinces of Cameroon. The fundamental policy is that all support and interventions in the informal sector must necessarily be selective and temporary to support the *ad hoc* nature of the sector's functioning.

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Chapter 6

Exploration of the informal sector in Buea

by
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I. Introduction

As part of the module on the Informal Sector, a field trip to the Buea Informal sector was organised during which an 'informal survey' was carried out. The objective was to sensitize the course participants to general employment, social and economic features and the specific educational and training needs of this sector which occupies in Cameroon and in many other developing countries a very large share of the labour force. The following report summarizes the results of the survey as well as the conclusions which were subsequently presented and discussed in plenary.

II. Organisation, method and content of the field work

Participants were divided into groups of three or four, with one Cameroonian (speaking the regional dialect and familiar with the local setting) in each group for the purpose of facilitated communication and geographical guidance. Different micro informal businesses had been previously identified by the Opportunities Industrialisation Centre (OIC)/Buea; the selection criteria were: limited capital, small-scale production and few permanent employees (1 or 2 max.).

The participants were asked to use a check list of questions relating to the characteristics of the persons to be interviewed (sex, origin, age, marital status, educational background, working experience etc.), their activity (type of activity, size of the 'enterprise', sources and amount of capital, etc.), training needs and other relevant issues. This checklist was to serve as a guideline for their 'informal' investigation, which was not to be shown or completed while interviewing people working in the visited informal businesses.

III. Description of the visited informal businesses

1. **A chicken parlour** (a very small informal restaurant forming part of a private home)

The visited chicken parlour is owned by a 32 years old lady on a part-time basis. She currently works in a bank and is assisted in her 'second job' by her 20 years old brother. A female housekeeper (age 25) is also helping her.

The owner is holder of G.C.E. A'levels but has received no business-related training; from her family she has acquired some knowledge and skills in cooking and catering. Her brother has received short-time training in business management at the OIC.

The chicken parlour was opened only two months ago. The start up capital of 1 Mio francs CFA was borrowed from the bank. Sales are irregular and the amount of running costs is approximated at 20.000 francs CFA per day.. The owner is aware of the Governmental Scheme of support to very small enterprises. Yet, it might be difficult for her to apply (her business is not registered and its prospects are very uncertain given the remoteness/lack of accessibility of its premises).

2. A welding workshop

The proprietor of the welding workshop is 54 years old and has been running his business for many years. Six apprentices are presently working for him on a part-time basis; two of them are 18 and 4 over 18, all unmarried.

The proprietor received 4 years of technical training within a special training scheme. His apprentices entered the informal skills training sector after primary schooling and declare that their choice not to enroll in secondary education was not due to their families' lack of funds.

The workshop was opened with an initial capital of some 300.00 francs CFA, the main source of capital was his larger family. The proprietor cannot make an estimate of his income and his running costs and has no knowledge of possible sources of finance to promote his business.

3. Modern furniture making

The owner of the furniture and upholstery workshop is 27 years old. He received five years of practical training after having failed his Primary school leaving examination. He presently employs one master and fourteen apprentices. Before qualifying, the apprentices have to undergo three years of training.

The business started up with a capital of 40.000 francs CFA borrowed from family members. Running costs are estimated at some 45.000 francs CFA per month and monthly sales at 60.000 francs CFA. The proprietor says that he does not know about any possibility of financial assistance from the Government for small businesses like his own. He thinks that high level skills training (in his area of activity) is needed but hardly ever provided by the existing formal training institutions.

4. Car wash

The business is jointly operated by two men (28 and 29 years old respectively). One of the proprietors went through primary school and one year training in agriculture at a specialised Training Centre, the other has successfully completed Primary School and received 4 years technical education. Both consider primary school education to be basic and required to run any business well.

The two proprietors of the car wash are natives of Buea. Their families are business people; it was this (and not lack of other employment opportunities) that influenced them to 'go into business'.

They employ two full-time workers (17 and 19 years old) and three pat-time workers (still at school). For these workers on-the-job training of two days duration is considered sufficient.

The visited car wash was opened three years ago with an initial capital estimated at 300.000 francs CFA (for the construction of a shed and a concrete surface, and the installation of water and light). One of the proprietors had drawn part of this capital from two businesses (a cold store and a farm) which he had -- unsuccessfully -- run before getting engaged in the car wash business.

A monthly account of income (but not of salaries) is maintained; the monthly income is estimated at some 90.000 francs CFA and running cost at some 45.000 francs CFA per month. The proprietors are aware of possibilities to receive bank loans but prefer the traditional loan and credit societies (the high interest rates and collateral security measures applied in the formal banking sector prevent them from asking for bank loans).

Both business owners declare that they have other sources of income (a township taxi and sales of imported fuel).

5. A vegetable seller

Two people -- mother and daughter (the mother lives separated from her husband) -- are involved in this business which has been run by the family for over 30 years. The interviewee (the daughter) is 17 years old, unmarried. She is a primary school drop out and thinks that any 'office job' would be better than vegetable selling.

Neither she nor her mother have had any formal training; initially she did not feel that there was any need for training in their business. On prompting, however, she declared that she would need some marketing and accounting skills; she also felt that their business would be more

Starting up capital was estimated at some 8.000 francs CFA and daily profit at some 500 francs CFA. Another source of income for them is farming.

6. An automecanic workshop

This car repair workshop also included a carpentry and a welding workshop. The business had been in operation for about 10 years. The owner had no other sources of income. He was 31 years old and married with two children. He had been a primary drop out and had from the age of 15 undergone 4 years of apprenticeship training. His impression was that his type of business was for those who did not do well at school and that he would want his own children to be involved in the workshop only if they failed at school.

The proprietor employs one full-time worker and three to four part-time apprentices (who are still attending school). He estimated his starting capital at some 100.000 francs CFA which was raised by members of his larger family. Government schemes for

supporting small businesses were unknown to him. He did not know either that he could have access to short training courses (including evening courses) provided by centres such as the OIC but was eager to take advantage of this possibility; he said that especially courses in book-keeping and management could help him to increase his income.

7. Tailoring

The visited tailoring workshop is run by two young men. One of them, the interviewee, comes from another town (Kumba); he had initially been trained as a bricklayer but had subsequently joined his friend who is the owner of the tailoring workshop and who has trained him for two years. He has no fixed salary nor has he signed any employment contract; he and the proprietor work on the basis of mutual moral engagement.

The starting capital was accumulated when the proprietor was an apprentice. At present, the business is reported to be at a subsistence level. The capital needed for further expansion is lacking; but the proprietor and his employee are trying to save some money in the Post Office and in traditional saving and loan societies. They are aware of the Government's financial support schemes but have never been interested in taking advantage of it. Both have graduated from primary school and think that basic training in accounts and book-keeping would be profitable to their business.

8. An electrical material shop

The one-man-business is run by a trained electrician. He had been trained by his uncle while attending the last 2 years of primary school plus one year after completion of Primary education. The shop was opened (starting capital: 1.2 Mio francs CFA from his own savings) in 1988 and now employs 4 male (part-time) apprentices); plans to employ one of them full-time exist.

Daily costs are estimated at 1.600 francs CFA and the global mount of fixed and circulating capital at some 2.5 Mio francs CFA. The shopowner is aware of governmental support schemes and says that he will take advantage of them only when and if economic prospects improve. He presently plans to make his business more profitable in buying his supplies personally from Nigeria (instead of receiving it from a deliverer in Douala, Cameroon). Basic training in book-keeping and management is considered as a possible further asset for his business.

IV. A brief summary of field findings

In spite of their diversity (differences in the starting capital, monthly income, number of persons employed etc.) the situations characterising the visited businesses in the informal sector of Buea revealed a certain number of common features.

In the first place the proprietors of these business establishments were receptive to the interviewers and ready to discuss their business operations. The starting capital raised came in almost all cases from the family or individual savings. Only one proprietor got a bank loan and this was most probably due to the fact that she worked in an bank. Many

interviewees were not aware of the Government's Support Scheme for small businesses; those who knew about this 'aid pack' had not taken advantage of it -- either because they did not know how to go about it or they simply did not bother. They relied on minimum, often insufficient, personal capital.

Except for one or two partnerships the visited businesses were one-man operations that relied mainly on the labour force of apprentices and/or family members. They employed very few outside labour (the main reason mentioned by some of the proprietors interviewed being the gloomy economic prospects in the present context of serious economic recession). Almost all of them were essentially based on manual labour. At first sight the idea of 'modernization' at least in terms of using more sophisticated technologies seemed somehow far fetched to the interviewees. Yet, after further discussion with the investigating course participants many of them acknowledged that the use of appropriate technologies (e. g. the use of cooling facilities for the storage of vegetables) could help them to increase their productivity and income.

Almost all proprietors had more than one business undertaking -- not wanting to "put all their eggs in one basket". Many interviewees considered business in the informal sector as 'meant for school drop-outs', although they themselves had successfully graduated from Primary school and sometimes even acquired additional technical education; only few of them had not completed their primary education. In all cases basic education was considered as an important asset in any business.

Findings showed that none of the visited businesses kept accounting books of any kind -- not even the bank worker running a chicken parlour as her 'second' job". Consequently, they were not quite conversant with the profit and loss of their operations. They generally recognised that some basic training in book-keeping and/or business management could help them to make their operations more profitable.

V. Some conclusions on training needs of the visited informal businesses

The following table is an attempt to systematise the training needs discovered during the field trip to the informal sector of Buea:

Business Characteristics and Training Needs

Characteristics of business	Content of training requirements	Remarks on type of training to be provided
1. Chicken parlour		
- 2 part-time workers - Basic technology - raw materials from formal and informal sector - Product/service: not complex	- Basic catering - Basic book-keeping - Basic business management (training required by proprietors and all workers)	- Training for expansion - Short and intensive non formal training
2. Welding and car repair workshop		
- 1 worker, 6 apprentices - Basic technology - few raw materials from formal sector - product/service: of simple to middle-level complexity	Technical training in: . auto-electricity . spare parts management . steel works (training required by proprietor and his worker)	- Training for expansion - 1 year intensive course
3. Modern furniture workshop		
- 2 workers and 14 apprentices - Hand tools used - raw materials from formal and informal sector - limited variety and complexity of products	- Technical training in furniture making - Basic training in book-keeping (for the proprietor)	- Intensive technical training course
4. Car wash		
- 2 proprietors, 2 full-time, 3 part-time workers - Limited materials required; from formal and informal sector - No specific technology used - Service provided: not complex	- Basic training in: . book-keeping . accounting (for the 2 proprietors)	- Training for accountability - Short duration - Non-formal
5. Vegetable seller		
- 1 full-time (family) worker - few materials; from informal sector - no specific technology used - service/product: not complex	- Basic training in: . book-keeping and accounts (for proprietor and family worker)	- Training for accountability - Short duration - Non-formal

Characteristics of business	Content of training requirements	Remarks on type of training to be provided
6. Automechanic workshop		
- 1 full-time worker 3 apprentices - raw materials from formal and informal sector - Middle-level technology and simple tools used - Service provided: of middle-level complexity	- Technical training in: . automecanics . spare parts management . steel works - Basic training in book-keeping and accounts (for proprietor and his worker)	- Training for expansion - 1 year intensive technical training - Short course in management
7. Tailoring		
- 1 proprietor, 1 full-time worker (co-manager) - Basic technology - Raw materials from formal sector - Product: of middle-level or high complexity	- Basic training in: . book-keeping . business management (for proprietor and his worker)	- Training for accountability - Short duration - Non-formal
8. Electrical material shop		
- 1 proprietor, 1 worker 4 apprentices - Basic technology used for repair work - Product and service provided: of limited to middle-level complexity	- Basic training in: . book-keeping . business management . electronics and industrial electricity (for proprietor)	- Training for expansion - Short- and medium-term courses - Non-formal

VI. Training in opportunities industrialisation centres

The local OIC that the course participants visited before starting their field trip is aiming to respond to the specific training needs of people involved in Buea's informal business sector (1).

The Centre offers various types of training courses; most of them are aimed at candidates between 18 and 40 years and having at least a Primary School Leaving Certificate:

- individualised (open entry -- open exit) training of a duration between 12 to 18 months in four major vocational trade areas: Automotive mechanics, building/construction, hotel/catering, furniture/construction; all programmes include 200 hours of Business Management lessons; 267 trainees have completed these courses, 239 are presently on roll;

- short management courses outreaching to the external audience (completed by advisory services);

- a three months pre-vocational training course that prepares individuals for vocational training with the objective to cause attitudinal changes and develop basic communication and computation skills; total completions to-date are 468 and some 80 trainees are enrolled;

- Community outreach sections (one for males, one for females) operated by the Rural Training Unit.

OIC advises trainees in developing job sluts and securing on-the-job training (systematic follow-up visits are carried out aimed at assisting former trainees and to provide feed-back to the programme). The placement rate of those having completed the 12 to 18 months training programme is 59%. Yet, it has presently to face a certain number of difficulties: the down turn of the Cameroonian economy has slimmed down job opportunities for OIC trainees. Openings can be found in trainees starting up small enterprises of their own but the problem of procuring seed capital does not allow full exploitation of this option.

The valuable contribution of centres such as the OICs to training in the informal sector is unquestionable. It must be acknowledged, however, that the placement of OIC trainees (who are often trained in using rather modern equipment and machines) tends to be difficult in areas with a low level of industrialisation.

VII. Discussion and conclusions

The subsequent discussion on the field findings focused on possible strategies for promoting the informal business sector. In many countries and in various respects cooperatives can obviously play a major role in the promotion of the informal sector. Thus, the development of a genuinely 'Cameroonian' informal business sector in Buea and in the South-West Province in general (which were administered by Nigeria until the cessation of the Province in 1961) started with the setting up of a Women's palm oil co-operative. The co-operative movements in the Province have been growing, since then, and branched out to other articles of sales. In Cameroon as well as in many other countries represented among the participants women have proved to be the main protagonists of cooperatives operating in many different areas (agriculture, small businesses, saving and lending cooperatives etc.).

Adequate sustainable solutions to the sector's difficulties in having access to credit still remain to be found. Lending services cooperatives seem to be successful in The Gambia. But in Cameroon only few of the Co-operative Credit Unions have survived; community banks with defined local catchment areas seem be more appropriate. At any rate special government measures to encourage savings and capital credits need to be taken and new strategies for reactivating the Government Support Scheme for small businesses (information campaigns via the radio e.g.) to be put in place.

A number of issues related to training for the informal sector should be given attention: What kind of technology should be used in training programmes for the informal sector (up-to-date or rather simple traditional technologies)? To what extent could (and should) the public sector call on the informal sector's proper resources (human and other resources) to organise training activities such as evening school training? How can people with no formal education at all be trained (Gambia's experience with training in book-keeping and business management provided in the native languages deserve closer consideration and evaluation)? Which lessons can be drawn from the various training schemes and initiatives 'for self-employment' that have been undertaken in a large number of African countries?

Last but not least it was pointed out that measures aimed at promoting the informal sector should be part and parcel of a coherent global development policy; in particular, decentralisation of the formal sector (from the urban centres to the rural areas and small towns) could give a significant impetus to the development of many related areas of activity in the informal sector.

Chapter 7

Estimation of manpower demand and supply

by Bikas C. Sanyal

1. Objective of the session

During the previous discussions, the need for information on future requirements for qualified manpower has been emphasised to provide one of the bases for the planning of education. Some guidance is needed as to the direction that the development of education should take in quantitative terms to cater for future needs for skills. It is believed that forecasting of qualified manpower can provide this guidance. Although methods of forecasting have a lot of limitations (this will be discussed later), an increasing number of countries, especially from the developing world, are preparing manpower forecasts according to occupational and educational requirements within the framework of their development plans. The present session has therefore, as its objectives:

(a) to apprise participants of the different methods of projection of qualified manpower; and

(b) to sensitize them about the shortcomings of these methods as regards their adaptation to specific contexts.

2. Different methods of projection of qualified manpower needs

A variety of methods have been used to derive manpower forecasts in different countries. The dominant model is known in the literature as the "manpower requirements" method. The different steps of this particular model will be outlined and then discussed.

We shall adopt the methodology used in the OECD's Mediterranean Regional Project (MRP). This is for two reasons: first, this project provides the most extended number of "steps" in generating the manpower forecasts and, second, the MRP model (or some slight variant of it) is the one still used today by a great number of countries.[1]

The three major steps in qualified manpower forecasting are: (a) projecting the demand for educated manpower, (b) projecting the supply of educated manpower, and (c) balancing supply and demand. In what follows, we mainly consider the first step and its main stages, since we are dealing here with the manpower forecasts. Let us introduce the following symbols:

[1] Psacharopoulos G. and Debeauvais M. "Forecasting the needs for qualified manpower: towards an evaluation" in *Forecasting Skilled Manpower needs: The experience of eleven countries* Edited by R.V. Youdi and K. Hinchliffe, Unesco, Paris 1985.

P = population
L = Labour force
X = output
i = economic sector
j = occupation
k = educational level (or type)
T = target year of the plan
0 = base year of the plan

3. The demand side

The MRP methodology uses five main steps in assessing the required number of workers by educational level in the target year of the plan. These are as follows:

3.1 Step 1: Estimating the future level of output (X_T) for the target year

We know $\frac{X_0}{P_0}$ = GDP per capita in the base year.

Let r_1 represent the desired average annual growth rate in GDP per capita and r_2 the estimated growth rate of population.

Then GDP per capita in the target year T will be

$$\frac{X_0}{P_0}(1 + r_1)^T$$

and output in the target year will be

$$\frac{X0}{P_0}(1 + r_1)^T \times P_0(1 + r_2)^T = X_0(1 + r_1 + r_2 + r_1 r_2)^T = X_T$$

3.2 Step 2: Estimating the structural transformation of the economy or the distribution of GDP by economic sector

$$\frac{X_i}{X}$$

According to the International Standard Industrial Classification of Economic Activities, the major divisions of industries are:

i = 1. Agriculture, hunting, forestry and fishing
i = 2. Mining and quarrying
i = 3. Manufacturing
i = 4. Electricity, gas and water
i = 5. Construction
i = 6. Wholesale and retail trade, restaurants and hotels
i = 7. Transport, storage and communication
i = 8. Financing, insurance, real estate and business services
i = 9. Community, social and personal services
i = 10. Activities not adequately defined

In tabular form the structural distribution can be demonstrated as shown in Table 1 for the base year 0.

Table 1: Distribution of GDP by economic sector (base year)

Industry	GDP	GDP Share of total
Agriculture	$X_{1.0}$	$p_{1.0}$
Mining	$X_{2.0}$	$p_{2.0}$
Manufacturing	$X_{3.0}$	$p_{3.0}$
	.	.
	.	.
Services	$X_{9.0}$	.
Others	$X_{10.0}$	$p_{10.0}$
Total	X_0	1.0

Economic development, in particular, industrial development will change the share of different industries in the total GDP resulting in structural transformation of the economy.

The structural transformation will change the values of p_i ($i = 1, 2, \ldots 10$) depending upon the growth rates of each industry, which are often predetermined by policy.

$$p_{i.T} = \frac{X_{i(1+s_i)}^{T}}{X_T} = \qquad = \frac{X_{i.T}}{X_T}$$

Where s_i is the average annual growth rate of the industry i.

Let us remember that $\sum_i p_{i.T} = 1$

and $\sum X_i \ (1+s_i)^T = X_T$

X_{iT} is target year contribution to GDP of the industry i, $i = 1,2,\ldots10$

This will result in Table 2 for the economic structure of the country in the target year T.

Table 2: Economic structure of the country in target year T

Industry	GDP at year T	Share of GDP
Agriculture	$X_{1.T}$	$p_{1.T}$
Mining	$X_{2.T}$	$p_{2.T}$
Manufacturing	$X_{3.T}$	$p_{3.T}$
	.	.
Services		
Others	$X_{10.T}$	$p_{10.T}$
Total	X_T	1.0

3.3 Step 3: Estimating labour productivity by economic sector for target year and its change between base and target year

$$\left(\frac{X_i}{L_i}\right)$$

The productivity of labour for each sector is estimated from the GDP of each sector divided by the number of workers in that sector. For the base year, this can be represented in Table 3.

Table 3: Labour productivity of GDP by economic sector (Base year)

Industry	GDP	No. of workers	Labour productivity
i	X_i	L_i	X_i/L_i
Agriculture	X_1	L_1	$X_1/L_1 = q_{1.0}$
Mining	X_2	L_2	$X_2/L_2 = q_{2.0}$
Manufacturing	X_3	L_3	$X_3/L_3 = q_{3.0}$
	.	.	.
Services	X_9	-	-
Others	x_{10}	L_{10}	$X_{10}/L_{10} = q_{10.0}$
Total	X_0	L_0	$X_0/L_0 = q_0$

Due to changes in the technology, means of production and organization of work, labour productivity will change in varying degrees for the different sectors. These changes are estimated from (1) past trends or (2) model country productivities or (3) international comparison or (4) experts' judgement or (5) a combination of several of (1) to (4).

Let the productivity growth rate estimated as above for the sector i = u_i, then

$$q_{i.T.} = q_{i.0}\,(1 + u_i)^T$$

Where q_{iT} = productivity of the sector i in the target year T. This gives us Table 4 for the target year.

Table 4: Labour productivity by economic sector (Target year)

Industry	GDP in year T	Productivity in year T	No. of workers in year T
Agriculture	$X_{1.T}$	$q_{1.T}$	$X_{1.T}/q_{1.T} = L_{1.T}$
Mining	$X_{2.T}$	$q_{2.T}$	$X_{2.T}/q_{2.T} = L_{2.T}$
Manufacturing	$X_{3.T}$	$q_{3.T}$	$X_{3.T}/q_{3.T} = L_{3.T}$
Services	$X_{9.T}$	$q_{9.T}$	$X_{9.T}/q_{9.T} = L_{9.T}$
Others	$X_{10.T}$	$q_{10.T}$	$X_{10.T}/q_{10.T} = L_{10.T}$
Total	X_T	q_t	L_T

The overall labour productivity can then be estimated as: $q_T = X_T/L_T$

3.4 Step 4: Estimating the occupational structure of the labour force within each of the economic sectors in the target year

$$\frac{(L_{ij})}{(L_i)}$$

The International Standard Classification of Occupations gives the following *major groups of occupations*

j = 0/1: Professional, technical and related workers, for convenience let j = 1 in our case.
j = 2 : Administrative and managerial workers
j = 3 : Clerical and related workers
j = 4 : Sales workers
j = 5 : Service workers
j = 6 : Agriculture, animal husbandry and forestry workers, fishermen and hunters
J = 7/8/9: Production and related workers, transport equipment operators and labourers, for convenience let j=7 in our case
j = 10 : Workers not classifiable by occupation and members of the armed forces, for convenience let j=8 in our case.

First let us examine the occupational structure of the labour force within each economic sector for the base year. Within each sector we shall compute the proportion of each occupation listed above. (See Table 5).

Table 5: Proportion of labour force by occupation and economic sector (Base year)

Industry/ occupation	Professional	Administrative	Production	Others	Total
Agriculture	l_1	$l_{1.2}$	..	$l_{1.8}$	1.0
Mining	$l_{2.1}$	$l_{2.2}$	..	$l_{2.8}$	1.0
Services					
Others	$l_{10.1}$	$l_{10.2}$	..	$l_{10.8}$	1.0

Note that $l_{ij} = L_{ij/L_i}$ = proportion of labour force in sector i with occupation j.

i = 1, 2 .... 10; j = 1, 2 .... 8.

For the target year, the proportions will change because of changes in the economy, technological changes, changes in the means of production and in the organization of work, changes in the qualification level in the labour force, etc.

The method of incorporating these changes will be discussed later. For the time being, let us assume that: $l_{ijT} = a_{ij}\ l_{ij0}$ where l_{ij0} is the proportion of labour force with occupation j in the economic sector i for the base year and l_{ijT} is the same for the target year.

a_{ij} is the proportional change in l_{ij0}

$$aij \geqslant 0$$

For example, a_{ij} could be equal to $(1 + r_{ij})^T$, where r_{ij} is the growth rate in the proportion on average per year.

So we can have the target year labour force for each occupation within each economic sector once l_{ijT} values have been calculated because from Table 4, we already know the total labour force for each sector in the target year and $L_{ijT} = l_{ijT} \times L_{iT}$ where L_{ijT} is target year labour force in occupation j and sector i and L_{iT} total labour force in sector i in target year (see Table 6).

Table 6: Labour force by occupation and sector (Target year)

Industry/ Occupation	Professional	Administrative	Others	Total
Agriculture	$L_{11.T}$	$L_{1.2T}$	$L_{1.8T}$	$L_{1.T}$
Mining	$L_{2.1T}$	$L_{2.2T}$	$L_{2.8T}$	$L_{2.T}$
Services				
Others	$L_{10.1T}$	$L_{10.2T}$	$L_{10.8T}$	$L_{10.T}$
Total	$R_{1.T}$	$R_{2.T}$	R_{8T}	L_T

R_{jT} = Total no. of workers with occupation j.

This leads us to the final step:

3.5 Step 5: Estimating the educational structure of the labour force in given occupations within economic sectors in target year

$$\frac{L_{ijk}}{L_{ij}}$$

As before, this is also done on the basis of the base year observations. First the educational levels and types (k) are determined and the number of workers with different levels and types of education within each occupation are noted. The proportion of each level and type of education within each occupation is computed. This proportion is the basis for future projection. The base year values of proportions (e_{jk}) can be demonstrated in Table 7.

The changes in these proportions are also determined for the target year in the same way as the changes in the occupational structure.

Let us assume that $e_{jkT} = a_{jk}\, e_{jk0}$

In a particular case we may have $a_{jk} = (1 + r_{jk})T$ where r_{jk} is the average annual growth rate in the proportion of labour force with education k within occupation j.

Table 7: Proportion of educated in different occupations by level and type of education (Base year)

Occupation/ Education	Level and type						
	Post-graduate	Graduate	Senior secondary	Junior secondary	Prim-ary	Others	Total
Professional	e_{11}	e_{12}	e_{13}	e_{14}	e_{15}	e_{16}	1.0
Administrative	e_{21}	e_{22}	e_{23}	...	....	e_{26}	1.0
Agricultural workers							
Production & related							
Services							
Others	e_{81}	e_{82}	e_{83}	..	...	e_{86}	1.0

e_{jkT} = proportion of labour force with education k within occupation j in target year (T) and e_{jk0} is the same for the base year, a_{jk} is the change in the proportion e_{jk0} for education j and occupation k. Since we know the total number of workers for each occupation in the target year, we can easily obtain the total number of workers for each type of education in that occupation by multiplying the total number of workers by e_{jkT}.

For example, to get the number of professionals needed with post- graduate degree (E_{11T}) we have to simply multiply R_{1T} by e_{11T} (see Table 7) or in general $E_{jkT} = R_{jT} \times e_{jkT}$, j = 1, 2 ... 8; k = 1, 2 ... 6. This gives us Table 8.

In the Table, F_{kT} = Total no. of workers required for the year T with education k to achieve the economic growth rate envisaged in our forecasts, based on the assumptions given above.

It should be noted that steps (1) to (3) pertain to general economic planning. Our concern as educational planners will be the last two steps which deal with occupational and educational forecasting. As indicated above, we shall give the different methods of forecasting the occupational structure below.

Several alternative ways have been used in different countries in their attempts to forecast the occupational structure:

(1) *International models*, i.e., to observe the occupational structure of a country at a more advanced level of development and hypothesize that this is the desired structure in the country where the forecast is being made.

Table 8: No. of educated needed for the different occupations by level and type of education (Target year)

Occupation/ Education	Post-graduate	Graduate	Senior secondary	Junior secondary	Prim-ary	Others	Total
Professional	$E_{1.1.T}$	$E_{1.2.T}$	$E_{1.3.T}$	$E_{1.4.T}$	$E_{1.5.T}$	$E_{1.6.T.}$	$E_{1.T.} = R_{1.T}$
Administrative	$E_{2.1.T}$				$E_{2.6.T}$		$E_{2.T} = R_{2.T}$
Agriculturists Production							
Others	$E_{8.1.T}$					$E_{8.6.T}$	$E_{8.T} = R_{8.T}$
Total	$F_{1.T}$	$F_{2.T}$	$F_{3.T}$	$F_{4.T}$	$F_{5.T}$	$F_{6.T}$	L_T

This may consist in the use of Model country comparisons, for example, Puerto-Rico utilized the coefficients of the United States, and Italy those of France.

It may also be Group country comparisons such as the use of parameters estimated from many OECD countries.

(2) *Model firm comparisons*, i.e., to observe the occupational structure of the most modern or efficient firms and stipulate that their occupational structure can be adopted for the plan.

In the socialist countries, for instance, the "model firm" is taken to be the one using the latest technology.

(3) *Staffing norms*, i.e., to follow the advice of experts or simply intuitive insight of the planner and specify certain desired ratios of engineers-to-technicians, doctors-to-nurses, and so on.

This technique is often used in the agricultural sector in general and in the socialist countries.

(4) *Time series extrapolation*, to predict the occupational structure simply as a function of time following past trends:

This method has been used extensively in French planning.

$$L_{ij}/L_i = f(t)$$

In most cases, more than one of these methods is used depending on the economic activity being analyzed, as mentioned earlier.

It should be noted that changes in the occupational structure due to changes in the economy, especially technological changes, are to be taken into consideration at this stage.

3.6 Forecasting the educational structure

There exist, in general, two distinct classes of methods for expressing the forecast in educational terms: those working from occupation to education, and those which by-pass the occupational dimension and produce directly the forecast in terms of education. We have considered above the first class of methods.

The educational content of given occupations is found according to a typical, idealized structure (methods followed by French planners). It could also follow the international model, group country comparison or model country comparison method described above.

It should be noted here that possible substitution between education and occupation can be taken into account at this stage.

3.7 By-passing the occupational forecast

In this case, the educational structure is derived as a direct function of labour productivity, i.e.

$F_k = f(X/L)$ or from a more general production function where a labour utilization coefficient (b) links output to educated labour, i.e.

$F_k = b.X$, where k is the typeof educatedlabour and X is the output.

4. The supply side

4.1 Based on manpower demand

From the total number of workers required for the year T with education k and obtained in Table 8, one can estimate the intake to the relevant education/training. To do so we shall first determine the number of graduates needed by level and type of education (k). Let us assume we have we have F_0 workers in stock of a given type in year 0 and we need F_T workers of that type in year T. We can arrive at F_T by several means. Two of them in common use are arithemetic progression and geometric progression (which is the same as assigning an average annual compound growth rate). Let us arrive at F_T with geometric progression i.e. $F_T = F_0 (1+r)^T$ which means we shall have an average annual growth rate of r which will be known since we know both the values of F_0 and F_T Thus we can get values of $F_1, F_2 \ldots F_T$, the workers needed for all the intervening years assuming that there was no shortage or surplus in year 0. If we have a shortage or surplus in F_0 we have to adjust the value of F_T accordingly (for surplus a subtraction, for shortage an addition). These values are shown in col (5) of Table 9. From these values we can estimate the number of workers needed to meet short fall (Δ) for each year from year 1 to T simply by subtracting consequtive values $\Delta_t = F_t - F_{t-1}$ for all t. These are shown in column 1 of Table 9.

The required number of graduates will also have to take into account the loss in the stock of any previous year due to death, migration, resignation, retirement etc. Let us call this rate f. So the loss in stock to be replaced in year t is:

$$F_{t-1} \cdot f = w_t \text{ (say)}$$

$$w_t = F_{t-1} f, \text{ i.e. } w_1 = F_0 f.$$

(These values to replace the loss are given in Column 2 of Table 9).

Therefore the total number of new workers needed is:

$$W_t = \Delta_t + w_t, \text{ for } t = 1, \ldots..T .$$

These are given in column 3 of Table 9.

The required number of graduates will also have to consider the non participation of graduates in the labour force. This may be due to home conditions, emigration, personal and other reasons. Let the participation (employment) rate be

g_t for year t.

Then the total number of graduates required is

$$G_t = W_t \; g_t \text{ for } t = 1, \ldots . T.$$

(These values are given in column (4) of Table 9.)

Thus we can project the total number of new graduates needed for each year for the given type of education from year 1 to year T. But the supply of graduates is already fixed for disciplines which take for a graduate more than one year of study. In the base year 0 we have already students at different years of study. For a course of study with duration of n years we have in the schools intakes I_{-n}, I_{-n+1}, ..., I_0 These values are given in column 1 of Table 10. These students will graduate in years 0, 1, 2, ..., n, respectively. These supplies will not be the same as the required number of graduates (G_t) shown in column 4 of Table 9. The differences will give the shortage/surplus for which the required number of graduates for the years n + 1 to T are to be adjusted. Note that we can only adjust the intake from year 1 and not earlier. To get the rate of increase/decrease of graduates we follow the following procedure.

We know the number of graduates required for each of the years during the period (year 1 to year T) from Table 9 column (4). Let us find the total of all these graduates and call it G. But, as stated earlier, the supply of graduates for the years 1 to n are already fixed because the students are already in the system, the course having a duration of n years. These figures are given in column 2 of Table 10. Let the total supply for these n years = G^1 Then we have to supply $G-G^1 = N$ graduates during the period n + 1 to T. Compute N. We know the number of graduates in year n from the intake of year 0, the base year. Call it Go.

To compute the number of graduates for the subsequent years we can follow several methods. We shall demonstrate only two here. A linear projection model will be used first and this will be followed by an exponential projection model.

In the linear model we assume a constant average increase in the number of graduates by the amount of r per year. Then the number of graduates in year n + 1 will be Go + r, in year n + 2, Go + 2r and so on. In year T the number of graduates will be Go + (T-n)r. To balance supply with demand we must have

$$(Go+r)+(Go+2r)+..+\left[Go+(T-n)r\right] = N$$

$$\text{or, } (T-n)Go + r\left[1+2+..+(T-n)\right] = N$$

$$\text{Or, } (T-n)Go + r\left[(T-n)\,(T-n+1)\right]/2 = N$$

$$\text{Or, } r = 2\left[N-(T-n)Go\right]/\left[(T-n)+(T-n+1)\right]$$

According to the exponential model we assume an average annual growth rate of r per cent per year. Then the number of graduates in year n + 1 will be = Go (1 + r), in year n + 2 it will be Go $(1+r)^2$ and so on. For the year T the number of graduates supplied will be Go $(1+r)^{T-n}$. To balance the supply with the requirement we must have

$$Go\,(1+r) + Go\,(1+r)^2 + Go\,(1+r)^3 + \ldots + Go\,(1+r)^{T-n} = N$$

$$0r,\ Go(1+r)\left[1 + (1+r) + (1+r)^2 + \ldots + (1+r)^{T-n-1}\right] = N$$

$$0r,\ (1+r)\left[1 + (1+r) + (1+r)^2 + \ldots (1+r)^{T-n-1}\right] = N/Go$$

Note that $1 + x + x^2 + x^3 + \ldots + x^n = (x^{n+1} - 1)/(x-1)$.

Replace x by $(1+r)$ and n by T-n-1. Then, $(1+r)\left[(1+r)^{T-n} - 1\right] / [(1+r)-1] = N/Go$

Or, $[(1+r)^{T-n+1} - (1+r)]\ /r = N/Go$

By the method of iteration we can get the value of r.

Let us call the adjusted new graduates required for each year $G^1 t$. Then $G^1 n+1 = G^1_n\,(1+r)$. G^1_n is known $= I_0\,h$, where h is the transition rate from intake to graduation. Thus we shall know all values $G^1_{n+1} \ldots G^1_T$. These values are also given in column 2 of Table 10. The intakes for the years 1 to T are obtained by applying the transition rates, now to the projected graduates.

The last colulmn (4) gives the balance between supply and demand. Because of the approximate nature of the growth rate computed by the method of iteration there is always some discrepancy at the terminal year.

If we apply a linear increase/decrease of constant magnitude per year then the calculation is more simple and the balance can be exact. Here the yearly increase/decrease may be computed as the number of graduates required in target year minus the number of graduates estimated in year n+1 divided by T-n-1.

Table 9. Estimated number of university graduates: 0 - T, Yearly distribution with given employment (g; labour force participation) rate and replacement rate (f)

Year	No. of graduates to meet addl. need (1)	To replace (2)	New graduates to be employed (3)	New graduates required (4)	Total graduates employed (5)
	Δ	w	W	G	F
0	-	-	-	-	F_o
1	Δ_1	w_1	W_1	G_1	.
2	Δ_2	w_2	W_2	G_2	.
	:	:	:	:	:
T	Δ_t	w_t	W_T	G_T	F_T

Note: Here we have assumed the type of graduates as university educated successfully completing a course of study with a duration of n years. The level and type may vary with variable duration of course. For each type the forecasts have to be made separately.

Table 10: Student intake required to meet the additional manpower need at university level.

Year	Intake	No. of grads.	Reqd. grads.	Balancing demand and supply
-n	I-n			
-n + 1	I -n + 1			
:	:			
0	Io	G^1_o		
1		G^1_1		
2		G^1_2		
:		:		
n		G^1_n		
n + 1				
:				
T.				

Note: Values I-n, ..Io are known. G^1_o should be known; G^1_1-G^1_n are estimated applying transition rates. G^1 n + 1 .. G^1_T are projected

So the intakes I_1 to I_{T-n-1} will provide us with the necessary manpower F_T with level of education k in the target year T based on the rates of transition, participation and loss due to resignation, retirement, death, emigration etc. as assumed in the model.

Applying the same methods, we can compute the intakes for all other types and levels of education.

4.2 Based on social demand

The supply projections involve three basic steps:

(1) Making population projections by school age groups. These projections take place according to any standard demographical model or, in certain cases, they are simple time extrapolations;

(2) Assessing the number of graduates by educational level and type. This follows the social demand model, namely school level transition probabilities are applied to the base population cohorts. These are followed through time until they exit the educational system, formal or non-formal.

(3) Determining the labour force participants. This is achieved by applying the sex-age-educational level specific labour force participation rates to the graduates generated in the previous step.

5. Balancing supply to demand

It is very unlikely that the demand for qualified manpower matches exactly the spontaneous supply assessed in 4.2. It is for this reason that a final exercise has to be undertaken, that is the adjustment to equate both sides, supply and demand.[2]

[2] The supply of manpower as projected in 4.1 will automatically match with the demand projections.

5.1 Revising the demand and/or supply projections

This is usually done in two ways that are not mutually exclusive.

If (Ejk) as estimated from the demand side is very different from the (Ejk) assessed from the supply side, the manpower planner will most likely go back to his computations and revise some of the assumptions used in demand and supply projections.

It might be realized, for example, that, the productivity coefficients used for future labour on the demand side were too *optimistic*. Or else, for instance, the participation ratio adopted regarding the labour force on the supply side was too pessimistic. Several other assumptions could be re-examined in light of certain factors. By selecting other parameters than those assumed originally the planner can reconcile a great deal of the discrepancy between future supply of and demand for qualified manpower.

5.2 Formulating the final plan

This step is the only genuine policy action for identifying manpower surpluses or deficits not likely to be covered automatically by spontaneous supply and then arranging for the output of educational programmes to equal supply and demand at the target year of the plan. The output has also to be phased year by year up to the target year. The policy of intake is to be based on these output figures, taking into account failure, drop-out and repetition parameters and other losses and additions.

The supply of educated manpower may also be balanced with demand by computing the required output for each level and type of education adjusting for losses and additions. The intake to each level and type is to be computed from the required output, taking account of failures, drop-outs and repetitions. The total intake for each level and type is then to be distributed for each year among the institutions.

5.3 Other methods of projecting qualified manpower needs

(a) Tinbergen model: this is one variation of the MRP model. It bypasses occupational forecasts, neglects primary education enrolments and goes straight to estimating educational requirements, giving special attention to the required number of teachers, delineating the path of enrolments from the base year to the target year. It also pays special attention to the replacement of expatriates by national qualified manpower.[3]

(b) Saturation norms method: saturation norms are ratios of qualified manpower to the total labour force or total production. These norms are established for different groups of enterprises and for different types of qualified manpower. When the total labour force or total output of production in the future is estimated, the number of qualified manpower needed can be determined.

However this need may not be the case with the projection of manpower supply as discussed in 4.2. For discussions on balancing supply to demand, supply projections of 4.2 are considered.

[3] Tinbergen J. and Bos H.C. "A planning model for the educational requirements of economic development" in Econometric Models of Education, Paris, OECD, 1965.

(c) Personnel nomenclature method: the nomenclature is a list of posts to be filled by qualified manpower. It is drawn up by means of expert analysis of each sector of the economy, group of enterprises or even a single enterprise, for the target year based on an analysis of the existing situation and future means of production of goods and services. The coefficients of qualification structure for each sector, group of enterprises or single enterprise (ratio of specialists with higher education to those with specialized secondary education, for example) are used to determine the number and type of qualified manpower which will be necessary.[4]

In addition there are several other methods of projecting qualified manpower needs, namely, the input-output model, linear programming model, social demand model, labour absorption model, etc. These, however, do not have much practical application. (For details one may read the works referred to in the article by G. Psacharopoulos and M. Debeauvais cited earlier).

6. Problems encountered in projecting qualified manpower needs

The problems arise principally from the assumptions incorporated in the methods when they are put into practice. These are:

(a) The occupational distribution in an economic sector is not as rigid in practice as is assumed in the MRP method. Inter-occupational substitution occurs, generally due to economic changes, but especially due to technological changes, making the projection inaccurate.

(b) The educational distribution of the labour force for an occupation is also not as rigid in practice as is assumed in the MRP method. Substitution of a level and type of education within an occupation by another level and type does take place, further contributing to inaccuracy of the projection.

(c) In countries where the educational system is extremely diverse, it becomes difficult to relate the level and type of education to an occupation.

(d) Depending on wages, prices and availability, enterprises produce given amounts of output with widely varying mixes of labour and machinery, making any forecasting of manpower extremely difficult.

(e) Uncertainties about the economic growth of each sector, productivity changes, variation in the participation rates of the labour force and in the educational system, mobility of manpower, etc., especially when forecasts made relate to a long time period (as in the case of qualified manpower needs), make the task of projection extremely difficult.

(f) In the saturation and personnel nomenclature methods, the total labour force or the total output are often over-estimated in practice because of extensive and intensive involvement of the enterprises and the influence they exert on the estimations which is often subjective. The norms applied for determining the different types of qualified manpower are also subject to bias of the experts. Objective analysis is often impossible.

[4] Ivanov I.V. "Skilled manpower planning, forecasting and training in the USSR" in R.V. Youdi and K. Hinchliffe, op. cit.

Finally, the available projection methods have not been able to take into account the rural-urban imbalance in manpower distribution and the costs of executing a manpower plan.

In spite of the above defects, these methods do provide some indication as to the direction education should take, especially when a country is committed to modernization, and an attempt is made to relate education with employment. With an improved information base, some of the defects can be rectified, although economic uncertainties will always exist. New methods of projection are expected to be developed using an information base which will provide signals for steering the development of education, with a continuous monitoring, feedback and control system.

The computerized manpower simulation model IIEP Paris

A practical exercise

This exercise is based on the MRP model and is developed in LOTUS 1-2-3.

Given the objectives and data limitations the projection exercise in this module is confined to the university graduates and A level(12 years of schooling) graduates for a given country.

1. The basic assumptions of the model are :

i) GDP growth rate and its sectorial distribution (tables 1 & 2)
ii) Growth rates in labour productivity (table 3)
iii) Occupational distribution of the labour force (tables 5 & 6)
iv) Educational attainment of the labour force as given in table 8
(v) Employment rate of 0.95 for university graduates(table 10) and 0.67 for the A level graduates (table 12)
vi) Net replacement rate of 0.03 (tables 10 & 12)
vii) Promotion rate of 0.6634 for university graduates (table 11) and 0.80 for A level graduates (table 13)

2. The computations of the model :

(i) Based on the projected rates of growth of GDP and population (table 1) calculate the GDP, population and GDP per capita for the year 2010.
(ii) Based on the projected percentage distribution of GDP by sectors (table 2) calculate: (a) the value added by different sectors in the year 2010 (b) the growth rates for each of the sectors.
(iii) Based on the rates of growth of labour productivity (table 3) calculate the labour productivity in each of these sectors for the year 2010.
(iv) Based on the computations in tables 2 and 3 calculate the distribution of workers by different sectors and the total number of workers.
(v) Based on the percentage distribution of workers by economic sectors and occupational divisions (table 6), calculate the total number of workers in each sectors by occupational distribution.
(vi) Based on the projected levels of educational attainment of the labour force in different occupations (table 8),calculate the number of University and 'A' level graduates required for the year 2010
(vii) Calculate the shortfall of University and 'A' level graduates for the year 2010.
(viii) Assuming that the attrition rate is 3% and labour force participation rate rate of University graduates is 95% and that of 'A' level

graduates is 67%, compute the number of University and 'A' level graduates required each year till the year 2010.

(ix) Assuming a graduation rate of 0.6634 at the University level, and assuming that the number of graduates will be increasing (a) linearly, and (b) exponentially; compute the intake of students at the University for each year upto the year 2010.

(x) Assuming a graduation rate of 0.80 at 'A' level,and assuming that surplus will be equally shared in all the years, compute the required level of intake of students at the 'A' level for each year upto the year 2010

3. The simulation exercise

As can be seen from the earlier sections, this model is based on a number of assumptions. All the assumptions need not always be realistic. Therefore it will be interesting to see what happens to the model if some of these basic assumptions are altered. This is very easy in this exercise since it is developed in LOTUS 1-2-3. Therefore as a simulation exercise, the participants are requested to change the assumptions of the following factors and to see the resulting changes in the total manpower required and enrolments at different levels (University and 'A' level in our example) of education.

(a) a change in the growth rate of GDP;
(b) a change in the distribution of GDP by sectors of origin;
(c) a change in the growth rates of labour productivity;
(d) a change in the occupational structure for the year 2010;
(e) a change in the assumed educational levels of the labour force for the year 2010.

A change in any of these assumptions will result in a different set of solutions regarding the projected figures. The advantage with this simulation exercise is that one can have more than one alternative projections regarding the manpower and educational scenarios for the country and policy makers can use the one which is closest to the reality.

Table 1. Basic data and assumptions

	1981	1991	Growth rate 1981-1991	Growth rate 1991-2010
GDP Percapita	1038.0	1395.0	3.0	2.8
Population	12720.0	14848.0	1.6	1,7
GDP(millions)	13209.0	20706.0	4.6	

Table 2. Distribution of GDP by sectors

	Value added 1991 Millions	%	2010 %	Value added 2010 Millions
Agriculture	5093.7	24.6	20.0	
Mining	704.0	3.4	5.0	
Manufacturing	2816.0	13.6	15.0	
Construction	1035.3	5.0	5.0	
Commerce	4037.7	19.5	20.0	
Transport	1967.1	9.5	10.0	
Finance	455.5	2.2	3.0	
Services	4596.7	22.2	22.0	
Total	20706.0	100.0	100.0	

Table 3. Productivity per worker in the base and the target year

	Productivity 1991	growth rate 1991-2010	Productivity in 2010
Agriculture	2717.0	2.0	
Mining	20971.0	6.2	
Manufacturing	6635.0	0.0	
Construction	7716.0	0.5	
Commerce	9231.0	1.2	
Transport	9785.0	2.2	
Finance	8105.0	1.5	
Services	4795.0	2.6	
Total	5026.0		

Table 4. Employment structure by economic sectors

	1991 (000)	%	2010 (000)	%
Agriculture	1876	45.5		
Mining	34	0.8		
Manufacturing	425	10.3		
Construction	134	3.3		
Commerce	437	10.6		
Transport	200	4.9		
Finance	57	1.4		
Services	957	23.2		
Total	4120	100.0		

Table 8. Educational attainment of the labour force, 2010 (%)

	University	A level	University	A level
Prof/Technical	20.0	40.0		
Admin. Managerial	25.0	15.0		
Clerical	3.0	5.0		
Other workers	1.0	2.0		
Total				

Table 9. Additional manpower needed

	University level	A level
Stock, 1991	58431	109623
Demand, 2010		
Need		
Req. growth rate		

Table 10. Estimated number of university graduates (Yearly distribution 1991-2010) employment rate = 0.95, replacement rate = 0.03

	to meet additional need	to replace	new graduates to be employed	new graduates required	total graduates employed
1991					58431
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					
2007					
2008					
2009					
2010					

TABLE 5. OCCUPATIONAL DISTRIBUTION OF WORKERS BY SECTORS FOR THE YEAR 1991

	PROF.& TECHNICAL	ADMN & MANAGERIAL	CLERICAL	SALES	SERVICE	AGRI WORKERS	PRODUCT. WORKERS	OTHERS	TOTAL
AGRICULTURE	1283	1476	9443	1119	15672	1824458	21860	517	1875828
%	0.1	0.1	0.5	0.1	0.8	97.3	1.2	0.0	100.0
MINING	193	151	500	144	408	51	32321	46	33814
%	0.6	0.4	1.5	0.4	1.2	0.2	95.6	0.1	100.0
MANUFACTURING	8639	8522	27049	8022	12373	6370	350841	2899	424715
%	2.0	2.0	6.4	1.9	2.9	1.5	8.3	0.7	100.0
CONSTRUCTION	5670	2322	11421	279	5965	338	107393	580	133968
%	4.2	1.7	8.5	0.2	4.5	0.3	80.2	0.4	100.0
TRANSPORT	3853	2201	62251	754	13087	530	115088	1810	199574
%	1.9	1.1	31.2	0.4	6.6	0.3	57.7	0.9	100.0
COMMERCE	3117	5400	31054	295699	61256	1439	37982	1371	437318
%	0.7	1.2	7.1	67.6	14.0	0.3	8.7	0.3	100.0
FINANCE	6613	4939	24114	2069	7520	70	11069	533	569267
%	11.6	8.7	42.4	3.6	13.2	0.0	19.4	0.9	100.0
SERVICES	217016	8675	91595	7604	118935	13753	413504	86039	957121
%	22.7	0.9	9.6	0.8	12.4	1.4	43.2	9.0	100.0
TOTAL	246405	33701	257525	315764	235259	1847109	1090403	93798	4119965

TABLE 6. OCCUPATIONAL DISTRIBUTION OF WORKERS BY SECTORS FOR THE YEAR 2000 (PERCENTAGES)

	PROF.& TECHNICAL	ADMN & MANAGERIAL	CLERICAL	SALES	SERVICE	AGRI WORKERS	PRODUCT. WORKERS	OTHERS	TOTAL
AGRICULTURE	0.15	0.35	0.50	0.20	0.90	96.95	0.95	0.00	100.0
MINING	1.10	1.75	1.85	1.00	1.65	0.25	92.30	0.10	100.0
MANUFACTURING	3.30	7.90	7.20	4.10	3.60	1.65	71.60	0.65	100.0
CONSTRUCTION	6.90	6.75	9.60	0.45	5.65	0.35	69.95	0.35	100.0
TRANSPORT	3.00	4.20	34.10	0.85	8.00	0.30	48.75	0.80	100.0
COMMERCE	0.60	2.55	4.30	78.65	9.45	0.20	4.10	0.15	100.0
FINANCE	13.30	24.00	33.30	5.40	11.50	0.10	11.80	0.60	100.0
SERVICES	32.05	3.05	9.30	1.50	13.30	1.30	32.25	7.25	100.0
TOTAL									

TABLE 7. OCCUPATIONAL DISTRIBUTION OF WORKERS BY SECTORS FOR THE YEAR 2000

	PROF.& TECHNICAL	ADMN & MANAGERIAL	CLERICAL	SALES WORKERS	SERVICE WORKERS	AGRI WORKERS	PRODUCT. WORKERS	OTHERS	OTHRWRKR L-(CDE)
AGRICULTURE									
MINING									
MANUFACTURING									
CONSTRUCTION									
TRANSPORT									
COMMERCE									
FINANCE									
SERVICES									
TOTAL									
% TO THE TOTAL EMPLOYMENT									

Table 11. Student intake required to meet the additional manpower need at the university level (linear estimation)

	Intake	No. of graduates	Required graduates	Balancing demand and supply shortage/surplus (-)
1987	4996			
1988	4661			
1989	4857			
1990	5020			
1991	5355	3314		
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				
2006				
2007				
2008				
2009				
2010				

Table 12. Student intake required to meet the additional manpower need at the university level (exponential estimation)

	Intake	No. of graduates	Required graduates	Balancing demand and supply shortage/surplus(-)
1987		4996		
1988		4661		
1989		4857		
1990		5020		
1991		56355	3314	
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				
2006				
2007				
2008				
2009				
2010				

Table 13. Estimated number of A level graduates (yearly distribution 1991-2010) employment rate = 0.67, replacement rate = 0.03

	to meet additional need	to replace	new graduates to be employed	new graduates required	total graduates employed
1991					109623
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					
2007					
2008					
2009					
2010					

Table 14. Students intake for A level and balancing demand and supply
intake-graduation transition rate = 0.80

	Intake	No of graduates	Required graduates	Balancing demand & supply
1989	80047			
1990	72354			
1991	82158	64038		
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				
2006				
2007				
2008				
2009				
2010				

Chapter 8

Need for pupil/student flow regulation

by Gabriele Göttelmann-Duret

Many developing countries have to cope with two major problems when trying to balance the demand for and supply of qualified manpower:

(i) *'Over-production' of graduates*, given the limited prospects for finding corresponding employment in the modern economic sector and

(ii) *a lack of qualified scientific and technical manpower* because *certain branches*, especially secondary science courses and certain post-secondary technology studies, *do not attract enough able and motivated young people.*

In order to overcome these problems educational planners and policy makers have to find adequate ways and means of improving the regulation of pupil and student flows.

I. Regulating access to higher levels of the educational system

In many developing countries undergoing extraordinary growth of primary schooling the existing systems of selection have hardly succeed in braking exponential enrolment growth in secondary and post-secondary education.

- Stopping the 'diploma race' has proved to be difficult, indeed. In the 1970s critics of the 'diploma disease' (1) suggested the *'de-linking' of diplomas from access to modern sector employment* as a possible way of limiting excessive enrolment growth in secondary and post-secondary courses of the academic type. They were hoping, then, that employers, especially the public sector (as the largest modern sector employer in most developing countries) could play a strategic role in the fight against 'over-schooling' by applying their own selection and training devices and procedures, independently of school diplomas and examinations. In practice, however, educational certificates have never ceased to be employed for job allocation, and a majority of people tend to believe that in spite of many negative facets, educational credentials constitute 'the least unfair' device for selection and recruitment.

- A number of countries have been trying to reduce pupil flows toward higher levels of the educational system by *restricting admission to upper secondary schools and, in certain cases, to lower secondary schools)* in the public sector. But such initiatives have often entailed increasing enrolment in the private sector. According to certain authors (2), the expansion of private secondary

education could be kept under control by subjecting institutions in the sector to general admission and entrance examination regulations; private institutions would be all the more ready to accept regulations of their selection procedures to the extent that they receive public subsidies in return. This type of strategy may, however, run up against strong pupil and parent opposition to any restriction of access to secondary and post-secondary levels because the latter are the only pathways to employment and to a decent standard of living. In such a context educational planners and policy makers have to identify and act upon the various factors affecting individual demand and educational choice that are amenable to their influence.

- The decision to go on to post-compulsory education at any given level or cycle (3) seems to be influenced (among other factors) by certain *structural features of the educational system*, the age at which choices occur, the multiplicity of choices and their more or less reversible nature. Early diversification of educational streams or tracks -- i.e. into general, technical, vocational courses of variable duration -- right after completion of primary school for example, obviously tends to limit the proportion of pupils who are either able or willing to complete the longer secondary courses. This is all the more so to the extent that some of the tracks/streams emphasize the terminal (job-related) nature of the course and that decent jobs are available even for those who have not completed longer secondary or post-secondary programmes. Many developing countries (especially in Africa), however, are characterised by high levels of unemployment and under-employment and cannot afford to develop the generally expensive technical secondary courses while the needs for basic education are still far from being satisfied.

- *Admission policies*, especially admission requirements to higher education, constitute another institutional factor affecting pupil/student choices. The precise effects of various admittance procedures to different cycles and different subjects is still a field open to investigation. But at any rate careful thought should be given to possibilities of breaking up the 'automatic' nature of immediate transfer between cycles and encouraging students to consider taking a break before returning to school or college. This suggest the need to maintain a flexible policy towards late entry to higher education.

- The consideration of *cost* seems to be particularly important when a pupil is making the decision about whether to leave school at the minimum age or not. Studies in developing and in developed countries suggest that enrolment growth rates in secondary/upper secondary schools tend to decline as a consequence of increases in school fees. There is some danger, however, that if increases in fees are uniform relatively bright but poor students may have to terminate their education and be replaced by less able students from high income families. To avoid this eventuality *increases in user fees* should be *discriminatory*.

Within certain limits the above-mentioned strategies can help restrict the growing student flows towards secondary and higher education; but they can hardly ever reverse 'strong trends' characterising the demand for education in a given country. In most developing countries the demand for education at the higher levels will continue to be high

as long as there is a strong relationship between the educational cycle which provides a diploma and the level of jobs for which that diploma either qualifies a person or allows him to compete. Where the pool of eligible primary school leavers grows inexorably larger every year and where the political pressure on governments to expand the capacity of the system is high, educational planners and policy makers will have to cope with a quantum increase in enrolments at secondary and higher education levels -- even if the mentioned flow regulation mechanisms prove successful to a certain extent. In a context of austerity *new ways and means of education* -- in particular distance courses at secondary and post-secondary levels -- are required to satisfy the non compressible demand for education without a commensurate increase in total cost or a serious decline in educational quality. (The Malawi Correspondence College is an interesting example in this respect).

II. Attracting student flows towards certain sectors

Quite a number of countries are facing a serious shortage of science and technology trained manpower while at the same time unemployment among graduates in the social sciences and 'humanities' is growing. In such circumstances, educational planners have to develop appropriate strategies to attract more students to those study fields and courses which can help overcome the stated manpower shortages.

- Formal *information and guidance systems* can bring young people in touch with the realities of educational choices, and their occupational consequences. However, substantial resources are necessary to create and develop effective school guidance services. In poor countries such services are generally not well developed. Even when a rather well functioning guidance tool is available one should not overemphasise the persuasive role capable of being played by improved information systems. Added information may influence a very small minority of pupils/students who are less confident of their choice; but it is by no means evident that it will help overcome significant problems of adjustment between pupil/student wishes and the employment market.

- Some governments have used special *financial incentives* such as bursaries to 'guide' a greater number of pupils/students towards specific branches (especially scientific or technical ones) at upper secondary and post-secondary levels; they seem to have all the more succeeded in attracting the more able students to the extent that they have made parallel efforts to enhance the reputation of the branches or courses concerned (in improving their quality and/or adopting severe selection criteria and procedures for admission).

- Certain groups of pupils and students (pupils in remote areas; older and married students, etc.), are particularly susceptible to geographic proximity when making their educational choices. *Location* can thus become a policy instrument which might form part of a system of inducements that helps channelling more young people towards certain courses or branches.

- *Admission policies* have direct and indirect effects on student choices and student flows. Certain countries have succeeded in attracting more students towards less popular courses by adopting special selection and recruitment

procedures for these courses: in selecting candidates for post-secondary courses in Agriculture and Technology on the basis of internal school-based assessment -- without the necessity to sit the national university entrance examination -- the Indonesian government e.g. has been able to increase the number of secondary school leavers with decent achievement levels enrolling in these courses; strict selection of secondary schools benefiting from the privilege of participating in this scheme and systematic comparison of university performances of the relevant recruited students with their schools' assessment contributed to the success of this initiative (4).

- Policy action aimed at *overcoming sex stereotyping* may also have to play a significant role: Frequently few active attempts are made to persuade girls to consider subjects such as science and technology. Policy solutions which could be envisaged to increase their enrolment in these subjects might include quotas for girls or even the setting up of separate schools for girls offering such traditionally 'less feminine' courses. The Girls' Science Schools in Nigeria constitute a rather successful example in this respect.

Concluding remarks

With a view to enhancing the flow regulation capacities of educational systems it will in particular be necessary to monitor:

- student choices and the factors affecting them;
- the results of any changes in the structure of the educational system and in admission policies;
- labour market changes and hirers' recruitment policies.

Chapter 9

Tracer studies to relate education with employment for development of human resources

by Bikas C. Sanyal

1. Introduction

Research on the relationship between education and employment has received significant attention in recent years among educational decision-makers, planners and administrators. It is now well recognized that simple quantitative forecasts of manpower needs cannot provide precise enough direction for the development of the education system. The relationship between education and employment can no longer be based on such forecasting models alone. The fact that there are aspects of this relationship which remain unknown makes it more complex. Researchers have to look into this unknown area, particularly at a time when the problem of unemployment among youth is becoming more and more critical. Overall open unemployment has been increasing at a very fast rate in almost all countries, except those where the economic recession has not been serious. However,the number of such countries are very few.

The problem in magnitude started increasing in the seventies. Although economic stagnation was believed to be the main cause behind this problem, it was also felt that many other factors were contributing to such a situation. These were sociological, psychological, administrative and organizational factors, which researchers had to identify in order to provide new tools for decision-makers to remedy this problem. However, such research has not always followed the same conceptual framework; different points of view about the relationship between education and employment have been the basis for different types of research. At one extreme, there is the point of view that the relationship between education and employment is artificially imposed by the society and vested interest plays a dominant role to keep a 'status quo' in such a relationship, thus perpetuating social hierarchy, discrimination and segmentation in the society. At the other extreme, it is held that educational systems could be reformed to provide skills to meet the social and economic development needs, as well as to meet individual expectations for upward social mobility, without going into the socio-psychological complexity of the relationship, reducing the analysis to the traditional quantitative forecasting exercises.

In what follows, we attempt to take into account the influence of the social structure on the development of education in relation to employment, based on the belief that reform measures if properly planned and implemented can reduce the problem of unemployment. A combination of two approaches has been utilized, as described in the following sections.

2. The conceptual framework of the relationship

It is argued that interdependence between educational development and the overall socio-economic development of a country in general, and development of employment in particular, calls for an analysis of the resource potential in natural, physical and human categories. To develop each region in a balanced way, the development strategy of a country should take account of whatever natural resource potential is available in that region. The process of exploitation and the choice of technology will be determined inter alia by natural resource potential. The exploitation of these resources needs skills which must be provided by the education system. The way in which natural resources are exploited, therefore, influences the educational development strategy in structure and content. It is also dependent on the available and potential physical resources such as building equipment, transportation and communication facilities. Development of these physical resources depends in turn on the development of education and vice versa. An analysis of physical resources potential therefore becomes an important task in ascertaining the role of ducation in the overall development strategy of a country.

In the analysis of the development of human resources, traditions, customs and beliefs cherished by the people cannot be ignored. Demographic changes influence the human resource potential as well. Education, for that matter higher education, has to be planned in such a way s to develop this human resource potential in order to respond to the needs of the social and economic development of the country, while considering the expectations and attitudes of the people. An analysis of human resource development therefore becomes imperative in the overall analysis of the relationship between education and employment.

The conditions of work, recruitment and promotion policy of the employment market influence the type of qualification that an employee would have. The full employment policy, on the one hand, has to guarantee a job for every individual. In countries where this policy does not prevail, individual initiative is necessary for obtaining employment. Therefore, the development of human resources becomes dependent on the operation of the labour market and the prevailing employment policy. The policy of human resource development for economic and social needs calls for an analysis of the skills needed for the various activities of the economy. The output of the education system, by type of skills taught, has to be known for proper utilization of the human resources it generates. Before the education system can be planned with respect to intake, content and structure, it is only logical that demands for such skills in quantitative terms should be estimated beforehand to whatever extent possible. These estimates of demand, which traditionally have been called manpower demand, but in our conception are broader than than because of the consideration of the qualitative aspects, are susceptible to inaccuracy due to economic uncertainties and the changing nature of the perceptions, attitudes and expectations of the different segments of the society. However, some guidance is needed as to the direction that the development of education in general, and higher education in particular, should take in quantitative terms to cater for the future needs for skills so as to avoid unemployment, underemployment, or shortage of skilled human resources.

It is considered that these estimates, if properly prepared, can provide such guidance. These quantitative estimates of needs for skills can be checked with the actual values to identify the degree of inaccuracy and to form a checklist of missing parameters and variables. They re also useful for setting the foundation of the strategy for the development of the structure and organization of the education system.

It is assumed that where higher and vocational education is concerned the estimates are easier to make, because of the increased degree of correspondence between the skills imparted in the education system and the skills needed on the job, than for other types of education. Having regard to the problems of estimating future needs for highly qualified manpower, an analysis of the matching between the quantity of trained people and the quality of the training content demanded by the economy and responsiveness of the institutions of higher education becomes particularly useful. This analysis of matching brings out the shortcomings of the education system, not only quantitatively but also qualitatively. A careful diagnosis of the education system forms the basis of any future strategy for the higher education system and also provides a yardstick for achievements in restructuring the social system through change in the educational system, and illuminates the problems encountered in achieving the targets of socialization and equality of opportunities in the world of work. These problems may be seen in the various education '.paths' of different population groups, which result in the different working opportunities in the labour market.

This relationship is demonstrated in Figure 1.

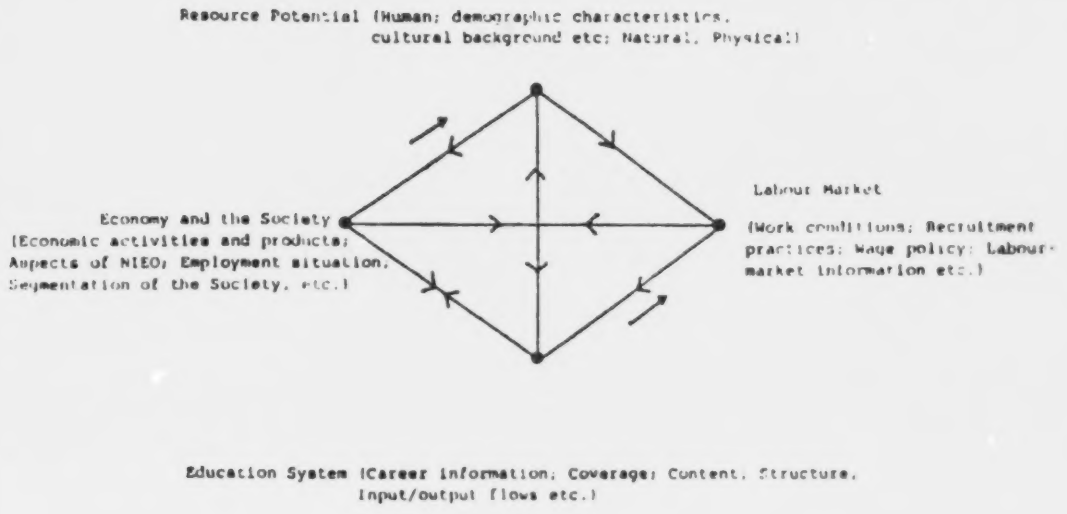
Resource Potential (Human; demographic characteristics, cultural background etc; Natural, Physical)
Economy and the Society (Economic activities and products; Aspects of NIEO; Employment situation; Segmentation of the Society, etc.)
Labour Market (Work conditions; Recruitment practices; Wage policy; Labour-market information etc.)
Education System (Career information; Coverage; Content, Structure, Input/output flows etc.)

Figure 1: Macro aspects

What is more important however are the micro aspects of the relationship. In the analysis of the relationship between education and employment, we are concerned with individual human beings and individual enterprises. Their background, attitudes and expectations play an important role in this relationship. What goes on in the labour market is a reflection of the social set-up including the educational system. We believe that the economy and the society, the human resource potential of the country and the education system as it is, influence the behaviour, attitudes and expectations of the individuals, their families, their community, and their educational history (see Figure 2). These factors again influence directly the expectations of each individual in respect of his or her social role, as does the operation of the labour market through its selection criteria, recruitment practices, labour market information system, etc. But the occupational expectations are also indirectly influenced by resource potential, economy and the society and the educational system through the individual characteristics (sibling position, family size, parents/guardians' occupation, education and income), the community characteristics (home region, religion, ethnicity, tribe) and the early educational history (type of school, type of education, academic performance, etc.) (see Figure 3).

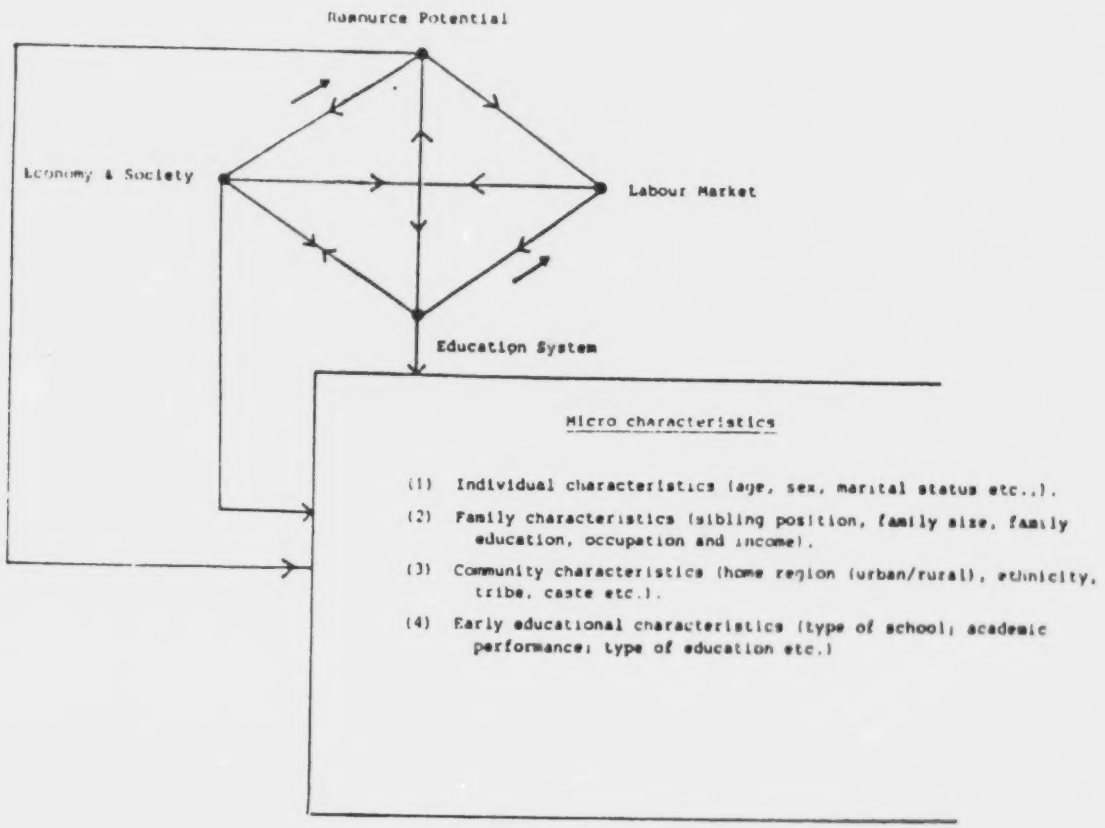
Resource Potential
Economy & Society
Labour Market
Education System
Micro characteristics
(1) Individual characteristics (age, sex, marital status etc.,).
(2) Family characteristics (sibling position, family size, family education, occupation and income).
(3) Community characteristics (home region (urban/rural), ethnicity, tribe, caste etc.).
(4) Early educational characteristics (type of school; academic performance; type of education etc.)

Figure 2: Macro-micro inter-relation

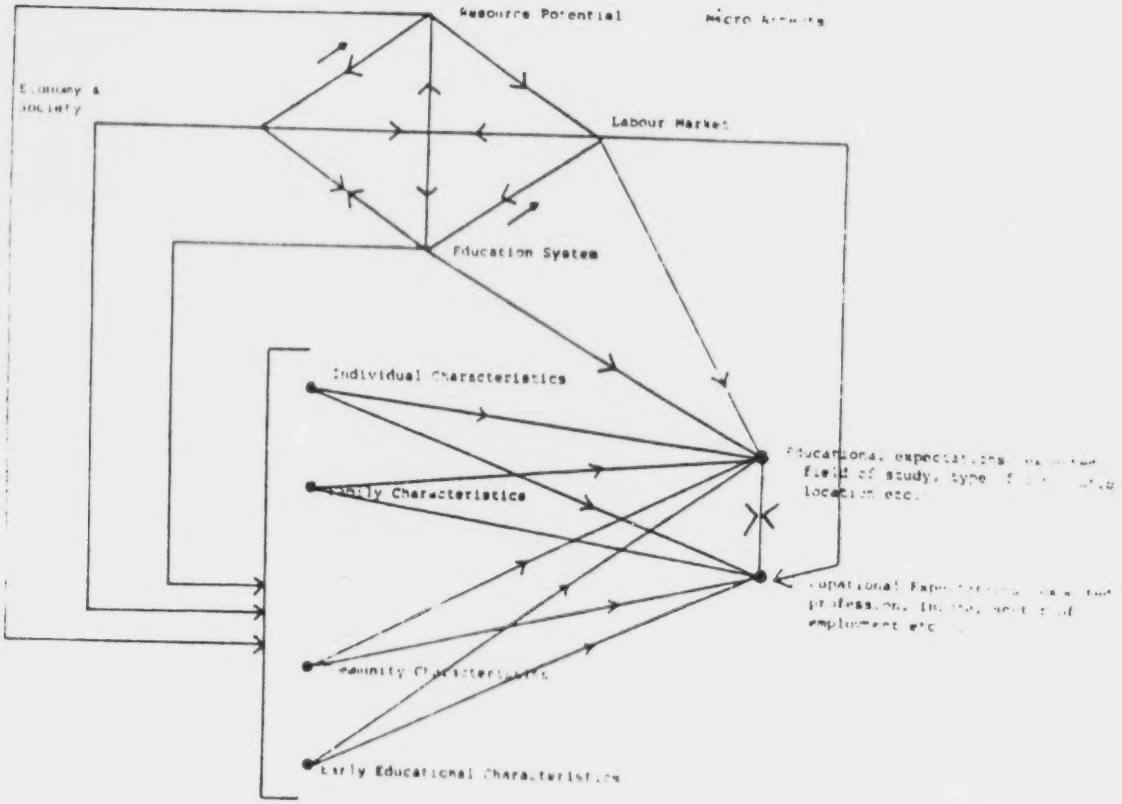

Figure 3: Occupational expectations derived from the macro-micro interface

Similarly, motivation in respect of education is generated directly by the motivation in respect of occupation, functioning of the education system, the individual, family, community and early educational characteristics, and indirectly by the resource potential, economy and the society, and the education system through the individual, family, community and early educational characteristics. It is considered that if a society is to be democratized, the education system, the economy and the society have to give emphasis on changing the micro characteristics so as to generate egalitarian occupational and educational expectations which would then lead to egalitarian educational and occupational careers of individuals.

The educational career of the individual is directly influenced by the educational expectations, the education system, the individual, family, community and early educational characteristics, and indirectly by the occupational expectations, the economy and the society, and the resource potential through the micro characteristics (see Figure 4). The items of educational career are type of institution attended and its location, field of study pursued, academic performance, change of subject during the course of studies, etc.

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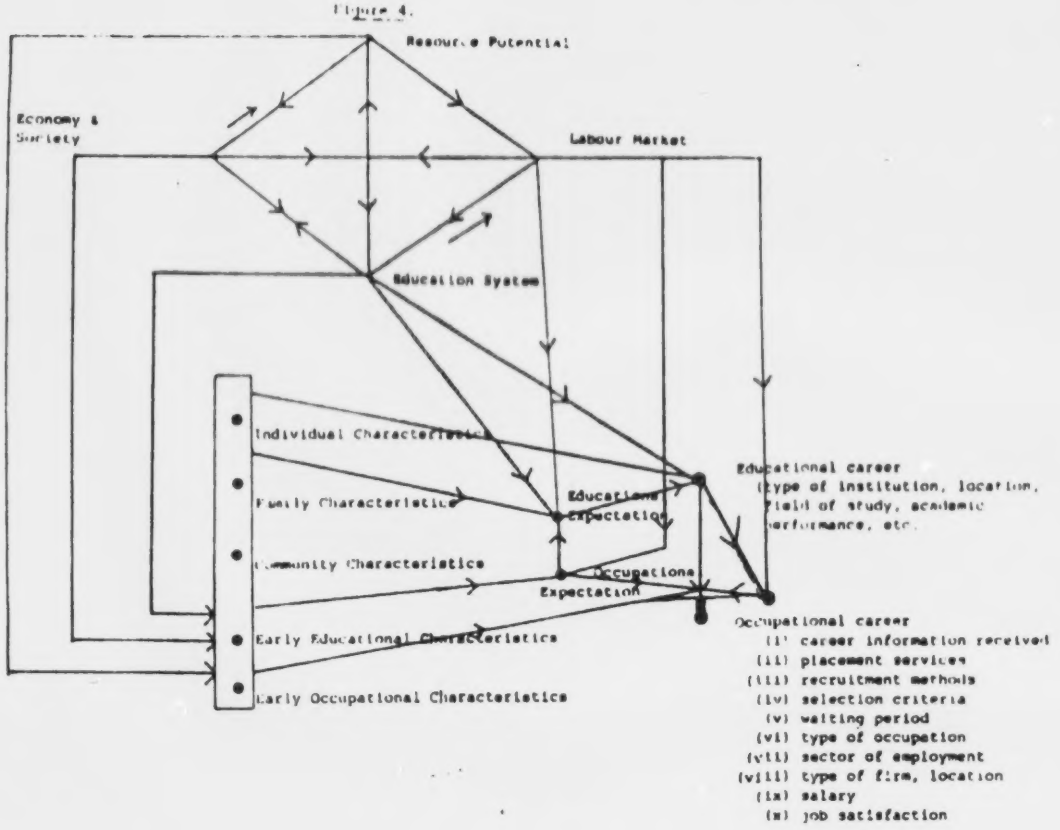

Figure 4: Occupational career derived from the macro-micro interface

The occupational career is dependent directly upon the educational career, the labour market situation, the occupational expectations, and individual, family, community, early educational and occupational characteristics, and indirectly upon the economy and the society, resource potential and the education system. The items of occupational career are career information received, placement services used, recruitment methods and selection criteria used, waiting period to obtain a job, type of post held, type of firm, location, salary, satisfaction on the job, and utilization of training/education on the job (see Figure 4). Some of these items are also in the domain of the employers which need to be checked with them to find whether the experience of the graduates matches with the employers' perceptions.

The basic thrust of our approach is that the education system as an important instrument for human resource development can change the characteristics of the individuals, families and the community, so as to make the transition from institutions of education to work smoother.

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3. Data needs

A conceptual framework as described above requires a lot of data and information on the resource potential, economy and social structure, education system, and on the labour market. A list of such data needs is given in Table 1 along with the possible sources. The analysis of the individual, family, community, early educational and occupational characteristics, occupational and educational expectations, educational and occupational career actually held by the individual also need considerable data, which are not usually available in published documents. Instruments have to be designed to collect such data. Three types of instruments are designed in the form of questionnaires: one for the students, one for the graduates (separately for employed and unemployed if it is feasible to cover them), and one for the employers. The data needs for the micro aspects of the relationship between education and employment are given in Table 2 (for students and graduates) and Table 3 (for employers). The data on the employers are needed for comparing the perceptions of the employers with the experiences of the graduates, as well as for identifying the relationship between education and employment as perceived by the employers.[1] The drawing up of the necessary questionnaires to collect the data will be discussed later in the course.

4. Collection of data

Representative samples are drawn from the student, graduate and employer population based on the random sampling technique; where such a technique fails, purposive sampling to cater for the special needs and scope of the study is adopted. Detailed methods are given in Reference 1.

5. Analysis of the data

A list of hypotheses is prepared to verify the conceptual framework described above and to derive policy measures. These are tested by standard statistical analysis, as described in the session on statistical techniques.

6. Results

As stated before, results of such research are to be related to the specific socio-economic context of the country. Implications for planning of education related to employment have been derived separately for each country studied (see list of publications on the subject attached).

[1] In some case, data have been collected from academic staff to better understand the relationship

Table 1: Data needs for macro aspects of the relationship between higher education and employment

Items	Required information/statistics	Sources
1. Resource potential :		
(a) Human :	Population characteristics by region, social groups, age group and sex; cultural background; traditions, customs; working population; labour force participation by social groups, age and sex; educational participation by social groups, age and sex; emigration and immigration.	Census, sample surveys, historical and social studies on the country; labour force and educational statistical yearbooks of the country.
(b) Natural and physical :	Nature resource reserves; underground, on the surface and underwater; water and land transport; climatic conditions; flora and fauna; physical infrastructure; buildings, equipment and other facilities.	Geological, agricultural and economic surveys of government, non-government and international agencies.
2. Economy and the society :	The role of the modern and the traditional sector, the industrial origin of the gross domestic product; level of saving, income per capita; the characteristics of the new international economic order (NIEO), namely terms of trade, transfer of technology and division of labour, the role of external operators in the national economy; social stratification; employment situation.	Economic surveys and reports of the country prepared by national and international agencies, sociological studies, studies on political economy, employment reports, etc.
3. Labour market :	Selection criteria, recruitment and promotion practices, wage policy, labour market information, etc; the traditional labour market; the rural labour force.	Statistics on employment and earnings; reports of recruitment committees, salary commissions; statistics on labour force; census and sample surveys.
4. Education system :	Statistics on enrolment by type and level of education (past and present), by sex, region and social groups; statistics on physical facilities, teachers and budget, flow rates by year of study, level and type of education; availability of career information; information on content and structure of the education system in school and out of school; coverage of education; internal and external efficiency of the system.	Ministry of Education, Ministry of Finance, and Ministry of Planning; other reports and national and international level.

Table 2. Data needs for micro aspects of the relationship between higher education and employment: the students and the graduates

Items	Statistics/information	Sources
1. Individual characteristics	Age, sex, marital status	
2. Family characteristics	Sibling position, family size; education, occupation and income of parents/guardians.	
3. Community characteristics	Home region (urban/rural), ethnicity, religion, tribe, educational opportunity in the community, etc.	
4. Early educational characteristics	Type of school, location, type and level of education, academic performance, financing; other training activities.	Sample surveys conducted with specially designed questionnaires
5. Early occupational history	Whether worked as a student; if yes, nature and earnings; whether worked breaking studies; if yes, nature and earnings.	
6. Occupational expectations	Type of occupation expected, type of post, sector of employment, type of firm; expected waiting period; expected salary, motivational factors for working in rural area, expected selection criteria, placement services and recruitment methods.	
7. Educational expectations	Type of specialization desired; type of institution, location, type of performance expected; type of educational career information received.	
8. Educational career	Career guidance, admission criteria, reasons for the type of specialization pursued, type of institution attended, location, academic performance, changes if any in field of study during educational career; role of career information; relevance of education received.	Sample surveys conducted with specially designed questionnaires
9. Occupational career[1]	Career information, placement services, selection criteria, recruitment methods, waiting period, type of occupation, education/occupation match, sector of employment, type of firm, location, job satisfaction, motivational factors for work in rural area; reasons for delay in obtaining a job.	

(1) For graduates only. The statistics relate to the employed graduates; information on unemployed graduates is only useful if a survey can be conducted; only the first and last elements, namely career information and causes for remaining unemployed have to be included.

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Table 3: Data needs for micro aspects of the relationship between higher education and employment: the employers' perceptions

Item	Information/statistics	Sources
1. Characteristics of employers	Date of establishment, type of control, size, industrial group, nature of products and services.	Sample survey of employers conducted with specially designed questionnaire
2. Employment characteristics	Criteria for selection, method of recruitment, availability of job description mechanism, number and type of graduates employed, estimates of needs for graduates in the future, salary structure.	
3. Relationship with higher education institutions	Relevance of higher education programmes for job performance; organizational mechanism for in-service and on-the-job training; methods of co-operation with the institutions of higher education; best methods of organizing educational programmes related to the needs of the world of work.	

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Chapter 10

Science, technology and large scale enterprise development

by John W. Forje[1]

Introduction

There is virtually no country in the world which has not boarded the technological train which started in the West. It speeds along towards an unknown destination. The carriages are the different countries and peoples. Besides its negative impact on the environment, this situation also threatens the earth's cultural diversity. No one can slow the train down since the engine has no driver[2]

Cameroon is part of this process; its society is being revolutionized by advances in science and technology. The development of the oil industry in Cameroon opens new avenues for inter-linkages between higher education and industry, but the absence of such linkage between the two bodies has and continues to be an impediment to socioeconomic transformation of the country. The great divide between poverty and affluence lies not in the quantity and quality of natural resources found within the frontiers of a country but in its human resources capability, i.e. the know-how and capacity to convert these resources into usable products for the common good.

Today, three major groups of technologies are revolutionizing industry around the world. These are the enabling or frontier technologies -- information and communication technologies, biotechnology, and advanced industrial materials -- and they are responsible for creating a multitude of new products and services and transforming production methods in almost every sector of the economy.

The structure of the educational curriculum for human resources development in Cameroon has implications for the development of the oil industry and the overall industrial transformation of society.

This paper will examine the inter-relatedness between human resources development and industrialization. The pattern of higher education -- industry co-operation and collaboration determines the structure and pattern needed for the economic and industrial development of an emerging industrial country like Cameroon.

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1. Department of law and politics, CREE/ISH/MESIRES.

2. See Science Policy Vol. 12, No. 3. October 1990, Ministry of Higher Education and Scientific Research, Holland.

Certain recommendations are advanced for a mechanism to create an alliance between higher education and industry and establish a cordial relationship to help forge and enhance the industrialization of the country. These recommendations are based on the premises of certain deficiencies inherent in the country's colonial and post-colonial development. Some of these can be listed as follows:

- national policy for education and human resources training has been articulated and aggregated without due consideration of the policy for exploitation and development of the oil industry and the industrial sector in general.

- the non-existence of a coherent national science and technology policy;

- technological development in the oil industry is constrained due to the lack of highly trained manpower capacity/capability;

- the non-existence of a university-research-industry accord;

- development of the oil industry has not significantly affected or influenced the country's pool of manpower or the quality of its manpower[3]

Seen within this framework, there is an urgent need for a concerted educational curriculum that inter-marries university education, research, and industry; to formulate and implement a concerted science and technology and research and development (R&D) policy; the need for a formal education system to intervene in the training of manpower for the industrial sector; to allocate adequate financial resources for R&D and to promote and encourage technical subjects at an early stage in the educational system.

These postulations as Sanyal et al (1990)[4] point out, need to be verified if future educational planning and policy-making is to respond positively to the scientific and technological development needs of the country.

As we know, the scientific and technological needs of the country are many and varied; inadequate human resources development; poor institutional infrastructure and lack of inter-sectoral linkages impair technological advances. These factors mitigate against the economy benefiting immensely from the establishment of the oil industry and in taking advantage of advances in the scientific and technological domain. The petrol chemistry industry is one that opens many possibilities for development since it has multifarious linkages with agricultural and other industrial sectors.

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3. See Bikas C. Sanyal et al (1990), Development of the Oil Industry in Cameroon and its implications for Education and Training. IIEP Research Report No. 79, p. 3, UNESCO, Paris.

4. Bikas C. Sanyal (1990) Technological Development and its implications for Educational Planning: IIEP Research Report No. 85, UNESCO -- Paris.

Misconceptions

Since independence many African States have continued with the economic structures developed during the colonial period. This policy approach has had great consequences for the development of the region and Cameroon in particular.

Africa's independence at the early stage was dominated by two misconceptions about technological development in the region. The first myth was that the existence of scientific research institutions was the factor that contributed to economic change. The second focused on the belief that technology was readily available and could be easily obtained through technology transfer arrangements.

The 1962 United Nations Conference on science and technology for the underdeveloped countries asserted that developing countries could 'leap frog across the centuries' by applying or harvesting the technologies already available in the market. These good intentions have failed to materialise due to vested western interests that continue to hinder the transfer of technology to developing countries. The failure of the high hopes of the 1962 UN Conference and other emerging issues led to the 1979 United Nations Conference on Science and Technology for Development (UNCSTD) in Vienna, Austria.

The first misconception contributed to the proliferation of science and technology institutes and research councils in many African countries. Most of these institutions lacked both the legal and financial support necessary to effect the generation of endogenous technologies in the development process. Some of them tried to deal with local problems and come up with technical innovations, but most of these have remained at design or prototype levels. The second assumption, that of technology transfer to Africa continues to be afflicted with numerous problems. In short, the assumption of technology transfer has been and continues to be misleading. In some cases, it led to the massive accumulation of enormous foreign debts due to importation of inappropriate technology and wrong investment strategies -- which have often ended as 'white elephants'.

Calestons Juma concludes that 'the high rate of technological failure has fostered an 'anti-technology' climate in some sections of African society. Technology is seen as the main cause of social problems.

Furthermore, we should also note that the wind of political independence came at the time of the publication of the earliest quantitative studies in the industrialized nations on the role and impact of technological change in economic development and socio-economic transformation. Sad to say, the implications of the studies were not grasped by African nations, hence, science and technology policy continued to be ignored until recently through the Lagos Plan of Action (LPA) and the recommendations of the Conference of African Ministers Responsible for the Application of Science and Technology to Development [CASTAFRICA] I and II.

What is noticeable throughout the continent is the persistent lack of endogenous technological advancement and greater dependency on exogenous technologies. Technological advancement constitutes a vital component of economic development and growth.

Africa's economic underdevelopment can be explained through its inheritance of a raw material export policy approach. In addition, there has been few incentives to establish a strong scientific and technological base as a tool for self-reliant development and as a mechanism to enhance participation in international competition. These biases were inherited at independence, and the application of technology still remains peripheral in many African countries.

As stated earlier, only recently have attempts been made in the continent to recognize the role of research, technology and economic transformation as an essential ingredient in human resources development. The creation of Ministries of Scientific Research, Technology and Higher Education, academies of sciences and scientific organizations gives new impetus to the importance attached to the need and generation of an endogenous development attitude.

In some countries, the wind of change is strongly focused on the restructuring of the educational system to reflect the long-term and urgent technological requirements and needs of the country. But much has yet to be done to create the appropriate climate for the integration of infusion of endogenous technological innovations in the mainstream of economic development and growth.

We have also to appreciate the realities that certain development undertakings can hardly rely on endogenous technology alone -- in such cases -- for example the oil industry -- we have no choice but to depend on foreign high-tech currently not available within the country; and in which we lack both skilled manpower capacity and capability, not to mention the necessary infrastructures.

The plethora of problems facing the region calls for a complementary approach and application of technologies -- endogenous and exogenous -- to remedy the situation and not least, to avoid the development approach of reducing socio-economic complexity to merely technical problems. Socio-economic development and growth and technological advancement are interwoven complexities that must complement not alienate each other in order to attain a better life for all people.

In other words, various factors interact to produce the ultimate results. It is imperative at this juncture to appraise the existing realities that 'recent developments in the industrial and agricultural sectors indicate that the main agent of long-term socio-economic development and growth is not necessarily the relative endowment of land, labour and capital (or factors of production in neo-classical parlance) but the capacity to undertake technological innovation. It can be argued that African development and growth has lagged behind not necessarily because it has been exploited, but because the exploitation has gone hand-in-hand with limited scientific and technological advancement. To provide a more realistic picture of Africa in relation to the changes in the global technological map, it is important to conceive of social systems as non-linear. They change through the introduction of new information and technologies as well as institutional reorganization. For this reason, the introduction of technological systems into the economy reorganizes it and allows it to change its method of production and patterns of resource utilization.' [Calestous Juma (1989), The Gene Hunters, Zed books, pp. 31-32, London].

The resources exist in Cameroon but the various patterns of resource utilization are still marginalized and not fully exploited because of the prevailing policies on science and technology. To fall back on the views of Calestous Juma, 'African countries' capacity to undertake the required adjustments, depends on the ability of political leadership to grasp the significance of technological change and institutional reorganization.'

A shift in attitude is required. The entire problematique of the oil industry, the generation and utilization of science and technology in the socio-economic transformation of Cameroonian society requires an urgent shift in mentality and attitude towards human resources development, without which the benefits of development can hardly trickle down to the marginalized rural and urban poor. The trickle down approach in this context necessitates linkages between education -- research -- and the industrial sector to produce an appropriate delivery system to narrow the rural-urban imbalance; the meshing of modern and traditional technologies; openness towards change without destroying the cultural setting of the society in question.

Jacques Hallak states that 'a developing country's capability of participating in the benefits of technological progress, and of contributing actively to technological innovation, depends on a number of educational prerequisites. High-level researchers, engineers, and technicians must be trained and used effectively. It is not because developing countries must look to others to provide technology that they need not produce their own professionals, managers, technicians and skilled workers. Without them, they cannot assess the possible choices, select appropriately, or apply what they choose to their own contexts. Without them, there is no choice but to fall behind forever. A country's engagement in the development and use of new technologies has serious implications in terms of employment and skill requirements'. [Jacques Hallak (1990), Investing in the Future: Setting Educational Priorities in the Developing World, Pergamon Press, IIEP,. pp. 47-48, London.]

In a nutshell, this statement outlines the main problems underscoring Cameroon's technological backwardness and why fundamental changes not only in basic education but also the development of education at all levels is a necessary prerequisite in overcoming the underdevelopment which continues to plague Cameroon. A plea is made in this direction to begin to shift current emphasis on law, the humanities and the social sciences towards more emphasis on science-related disciplines.

Jacques Hallak notes that the experience of the newly industrialized countries also shows that basic scientific education with strong emphasis on technology and engineering must be attained before a country can expect to diffuse or adapt new technologies to local conditions on the shopfloor' (1990:53).

It goes without saying that current day interest in science and technology must be fostered and encouraged in the proper perspective with greater interaction between education, research and the productive or industrial sector. The introduction of science parks could be a way of promoting such a linkage. What is required at this stage is for the country to set out its priorities, establish an efficient management and organization system and to draw heavily on the successes and failures of other nations in meeting its human resources development requirements.

Socio-economic and political setting

Cameroon has a chequered political history; first as a German colony; later as a United Nations Trust-territory under British and French administration; and finally independence following the reunification of the two dependencies in 1961.

The different stages of the country's political evolution and transition have in different ways contributed to the non-emergence of a coherent and consistent policy strategy for national development. Unity in diversity only touches the tip of the iceberg of the realities of the problems facing the two communities that make up the Republic of Cameroon. Economically, the country is still an agricultural society since more than 80 per cent of the population depends on the primary sector for its livelihood.

The exploration and exportation of oil since 1977 could be visualized as a turning point and blessing given the falling world prices for the country's cash crops -- cocoa, coffee, cotton, tea etc. The exploitation of petroleum as a dominant factor in the Cameroonian economy eased the pressure on the cash crop sector to earn much needed foreign exchange and provide governmental revenue for various activities. For example, between 1977/78 and 1983/84 oil production rose from one-half of one per cent of GDP to 14 per cent, while agricultural production fell from 32 per cent to less than 25 per cent of GDP. Such changes require indigenous creation, adaptation and application of modern technology not only in the oil industry, but also in other sectors of industry[5]

Cultural diversity persisted since more than 200 ethnic groups make up the nation. Administrative diversity is prevalent due to the legacy of British and French structures of administration introduced and practiced in the region. This diversity is also evident in the educational system. As a result, attitudes towards the labour market, public duty and accountability are different between the Anglophone and Francophone communities. Thus the great Anglophone/Francophone divide remains a major obstacle to overcome. So far, genuine efforts towards total integration, particularly in the field of education have not been made to redress these significant differences. Disparity also exists in the natural resources of the two Cameroons. In addition, in terms of climate and vegetation, Cameroon can be grouped under three ecological zones: forest, semi-arid and savany zones making it a true replica of the African continent in miniature.

Benard Nantang Jue notes that whatever natural endowments the country possesses, it is evident that its economic success, i.e. development, reposes on the economic policies of the Government as well as on the vicissitudes of the international market. The importance of the latter factor cannot be overemphasized, as the country which is heavily dependent on trade is vulnerable to fluctuations in the terms of trade in the world market. On the other hand, the former cannot be ignored as they provide the framework for the regime, i.e. the political environment within which economic processes are carried out. (Jue, 1990: 4).

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5. See Sanyal et al (1990) op cit and Benard N. Jua (1990), Economic Management in Neo-Colonial States. The Case Study of Cameroon, Leiden, p.4.

Furthermore, the divergences in colonial policy coupled with the desparity in natural resources has had consequences for the pattern of national integration and development in the different parts of the country. Cameroon stands at the cross-roads of the inter-linkages of different factors which if not adequately addressed could lead to maldevelopment in the midst of plenty.

The evolution and structure of the petro-chemical industry

Oil exploration dates back to the 1950s through a French exploration company, Société National ELF-Aquitaine (SNEA) and its local subsidiary ELF-SEREPCA. These companies concentrated their activities on on-shore exploration. It was in the early 1960s that they switched their interest to off-shore but still with limited success: the exploration activities of ELF-SEREPCA reached a turning point in 1972 when oil was pumped out in Btika, in the South-West Province, close to the frontier with Nigeria. It took another four years before oil was found in large enough commercial quantities to attract industry. Actual oil production started in 1977 through a joint venture between the Cameroon public Co-operation -- Société National des Hydrocarburas (SNH) and the French company ELF-Aquitaine. By 1984, Cameroon was ranked the thirteenth oil-producing nation in the world. The State Oil Refinery, Société Nationale de Raffinage (SONARA) is responsible for the processing of the country's crude oil[6]

Over the years, the petroleum industry has emerged as one of the strategic enterprises for the country's development. There are plans for extensive expansion of the SONARA petroleum refinery; a complex for the transformation of natural gas into ammonia/urea and methanol; establishment of a complex for further exploitation of natural gas; and construction of facilities for production of plastic materials from petroleum products. (See Sanyal, 1990: 37).

Undoubtedly, the current and envisaged activities of Cameroon's petroleum industry involving exploration; development of infrastructure; production-processing of crude oil; storage facilities for crude oil; storage of petroleum products and distribution of such products, and of course, development of petro-chemicals requires skilled manpower currently not available in the country. Shortage of manpower capacity perpetuates dependence on foreigners and other mechanisms for sustaining this vital sector in the process of socio-economic transformation.

A study on the development of the oil industry in Cameroon indicates that the national gas complex would require a staff of 400 by the year 2000; 60 per cent professional and 40 per cent other workers; the administrative sector would require an increase of 25 per cent; the plastic complex will require 117 national professional technicians and four expatriates; the natural gas sector will need 427 and the methanol complex 309 staff members. (Sanyal, 1990: 37).

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6. For further information see Cameroon Sixth Five Year Economic, Social and Cultural Development Plan 1986-1991, Ministry of Plan and Regional Development, Yaounde, 1986.

Given the gross deficiencies in trained scientific and technological human resources and infrastructures in Cameroon coupled with the mismatch between education and employment, dependency on imported technology and manpower capacity will be sharpened. The educational curriculum and methods of manpower planning and training must be given attention to meet challenging current and future needs.

Oil exploration and production in Cameroon is dominated by three foreign transnational enterprises: Production Cameroon (TEPCAM), a subsidiary of TOTAL-LEP of France; ELF-SEREPCA, a subsidiary of ELF AQUITANE of France and PECTEN Cameroon, a subsidiary of American Shell. Production output for these companies is as follows:

Cameroon oil production

ELF-SEREPCA	65 - 70%
PECTEN	25 - 30%
TEMPLAM	10 %

The construction of metallic off-shore oil platforms is done under the aegis of the Union Industrie Cameroon (UIC), dominated by private foreign enterprises. Quality control of petro-chemical products is by two foreign firms, Baroid and Hydrac. Hydrac is controlled by SNH created by a Presidential decree on 12 March 1980. Petroleum by-product firms in the country are GETRAM and BOSCAM. SNH has over 50 per cent shares in GETRAM. BOSCAM is foreign dominated. The marketing and distribution of petroleum products in the country is undertaken by AGIP, BP, MOBIL, SHELL, TEXACO and TOTAL. A Canadian firm (SAFIMAR) is in the process of developing an integrated network for the distribution of petroleum products. The firms involved have consolidated their activities under an umbrella group, Groupement Professionnel des Petroliers (GPP) to guard against aggressive inter-firm market competition.

Educational curriculum

Education contributes to a nation's well-being through its trained manpower who contribute to advances in technology, the development of new products, and manufacturing processes, enhanced skills of the workforce, and the improvement of management practices.

Cameroon is unable to compete effectively in the global market because of the alienation of its educational system from the mainstream of development. The structure and functioning of the country's educational system is not aligned to the urgent and fundamental realities of the society, incorporating the development of domestic technological capability and based on the natural resources endowment of the nation. Its system of education still bears the imprints of colonial legacy, hence the functional existence of two separate systems of education, with eight of Cameroon's ten provinces under the tutelage of French domination, while two anglophone provinces (North and South West) remain under the influence and practice of the English educational system.

Theoretically, the University of Yaounde and other institutions of higher learning are bilingual. Practically, this is not the case. Higher Education structures on the French system helps in alienating potential anglophone students in furthering their education in engineering and sciences-oriented disciplines.

The absence of a coherent national science and technology policy, and an integrated higher education-industry related approach coupled with the down-grading of the status of engineering and sciences oriented careers in the public service, makes the overall output of scientific and technical graduates low and incompatible with the pressing needs of the country. Too few students are trained in science and technology as compared to the number of graduates in letters, law and social sciences, which are held in high esteem by the administration[7] Furthermore, the lack of maths and science teachers in secondary schools contributes to the vicious circle of under-supply and training of manpower potential in engineering and science-related subjects. In their study, Sanyal et al (1990: 51) noticed a sharp decline in the output of graduates from the Advanced Technical Colleges (ENSP). The Faculty of Science, Yaounde University which constitutes 25 per cent of the total number of students also suffers from the lack of institutional infrastructures and facilities, making it impossible for the faculty to carry out its academic activities properly and efficiently.

The unemployment rate amongst graduates in general is extremely high, partly due to the current economic crisis; partly to the non-linkage or orientation of manpower needs to the modern economic sector; and not least, due to an inconsistent development strategy adopted over the years. In addition, the rush for white collar jobs and the neglect by the authorities in promoting and encouraging technical subjects from primary to university levels all add to existing deficiencies in S&T and R&D activities in the country.

Unlike other oil producing countries in Africa (Algeria, Libya, Nigeria) neither the university of Yaounde nor any of the university centres and Advanced Technical Schools operates a department of petroleum studies. The absence of such a department increases the country's dependence on foreign institutions for the training of Cameroonians in the petrochemical industry.

In-house training

To overcome some of the deficiencies created by an unco-ordinated educational and industrial policy approach, the oil industry has set up its own training system. In 1977 ELF Cameroon opened a centre in Douala for the training of oil personnel. The course or training programme focused on general safety in process operations, first aid, fire fighting, instrumentation, compressor pumps; process control and maintenance etc. The establishment of a refinery training centre by SONARA in 1981 contributed to the decline of ELF training activities. Prior to this (1978-80) SONARA trained the nucleus of Cameroon engineers and technicians in foreign refineries, particularly in France.

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7. See R. Sack and E. Stuman (1985), University Level Manpower Supply and Demand in Cameroon. Status and Prospects, 30 January 1985, UNESCO, Paris. See also John W. Forje (1988), Science, Technology and Development Policy in Cameroon, Lund-Sweden.

SONARA training objectives are motivated and geared towards the needs of the corporation with a desire to secure some degree of skilled manpower self-reliance and technology transfer, independence and profitability. It is with these goals in mind that a training department comprising three sectors, administration, logistics, teaching staff and printshop under the leadership of a manager and deputy has been created.

In-house training is a necessity for oil industries to up-date knowledge and skills; to reduce costs, increase output and profits and enhance the progress of the enterprise. So far, the system of training developed by the oil industry at their local refinery training centres is quite impressive and encouraging given the existing realities of the country in the field of education. The flexible approach adopted gives the firms scope to train people in different skills and levels either in Cameroon or in academic institutions abroad.

The seven year-course for an 'agent de maîtrise' training management staff through different departments helps in creating a cadre of skilled technical staff. About 16 types of training course including computer, law, boiler-making, management safety etc. are provided. So far 68 per cent of employees of producers of crude oil had received in-service training; and 82 per cent of those in the refinery; a lesser proportion, 46 per cent of employees in distribution and stocking had been trained in company. Most of the in-service training is given to skilled workers (67 per cent), but even at higher levels more than half had also received some training either in the form of seminars or missions abroad. (Sanyal 1990: 133).

While such in-house training schemes are essential for the maintenance and progress of the oil industry, it is equally important for the public sector to step up activities particularly in the structures and functioning of the formal educational system to put at the disposal of the private sector the bulk of qualified manpower needed in the secondary sector.

The success of the measures described depends on the vigorous realization of a reform programme. In order to stimulate interest in scientific technical solutions among companies, the economic prerequisities and educational reforms have to be provided, not only with particular industrial sectors but for those dealing with high-tech and innovative enterprises. Some of the measures to be taken require a tripartite corporate approach with:

- strong emphasis on basic science and mathematics in secondary schools; at present these subjects are unsatisfactory.

- the performance of secondary technical schools has to be improved by (a) linking them more closely to industries; (b) making courses more work related; (c) recruiting qualified teaching staff, especially in mathematics and science, with a national incentive system; and (d) transferring, if possible, part of the training to the industries.

- the University of Yaounde should in co-operation with the industry and government, strengthen its scientific and technical branches; a post graduate course in science and technology policy and in technology should be established either at the university or in the Advanced Technical Schools;

- the unco-ordinated relationship between government, education and industry means that policy articulation for the oil and other industrial sectors and for education does not consider changes found desirable in the education system, as the industrial sector develops. It is evident that the general weakness in technical education can only be overcome in the long-term but that does not preclude certain short-term measures being taken now;

- to help develop local technological capability, the country should take advantage of the infrastructure of SONARA or those provided by other industries as well as its willingness to start work on research and development in the oil industry. (See Sanyal 1990: 134-135).

It is thus necessary to develop a tripartite co-operative or comprehensive programmes between the government, university and industry to stimulate and promote the scientific and technological building capacity of the country.

The western industrialized countries attach a pivotal role to technology in sustaining economic growth or, to put it more succinctly, view technology as a strategic variable for economic progress. Cameroon's aims should not be different, i.e. grappling with the paradox of accelerating economic growth, technological change and enhancing competitiveness in a world increasingly characterized as 'globalized'. For a country like Cameroon, the urgent and immediate task assigned to education, S&T and R&D as the 'motors of economic growth', is to enhance economic development and the social welfare of the population; new modalities to ensure success must be developed.

Perhaps some lessons could be drawn from the long-term objectives of the Cameroon refinery training centre to provide a reservoir of highly trained and experienced Cameroonians, to actively participate in the industrialization process of the society. However, the efforts of the oil industry should extend even further, for example, to assist the educational system in devising an option on basic petroleum studies in the formal educational structure of the country.

The absence of a coherent educational policy involving education and industry, coupled with the failure of many secondary schools, absence of more technical secondary colleges and the incapability of Yaounde University to provide students with specific occupational skills helps to explain why a relatively large proportion of workers at technical and professional levels have and continue to go abroad to acquire further training. Table 1 shows the type of training considered most useful to supplement formal education.

An opinion survey of workers shows how important it is for the country to link government-university-industry as a means of harnessing and enhancing the manpower potential of the country. According to the survey, 69 per cent of the employees thought that the challenge of technological self-reliance lay in developing university-government-industry relationships and research (56 per cent) while a lesser proportion were concerned with changing methods of instruction (38 per cent), and introducing new subjects (34 per cent).

Table 1. Type of training considerered useful to workers

Types of Training	Percentage
1. Company inservice training	43.3
2. Company training abroad	23.0
3. Training in another country abroad	18.0
4. Training in another company in Cameroon	15.5
5. Correspondence courses	9.3
6. Other	8.6
7. Short term courses in R&D institute abroad	3.3
8. Short term course in university abroad	3.3
9. Short term courses in Yaounde University	3.3
10. Short term courses in R&D institute in Yaounde	8.8

Source: Sanyal et al (1990), Development of the oil industry in Cameroon and its implications for education and training: IIEP Research Report No. 79, Table VI.2, p. 79.

Looking at the type of problems faced with regard to formal education when adjusting to jobs, the same survey found out that opportunities for practical work are lacking in the education system. The survey shows that workers felt their formal education to have been too theoretical (51.0 per cent), gave no information on industry (40.0 per cent) and did not promote creativity (24.0 per cent).

The interviews further showed that the most useful forms of training needed to supplement their formal education were company in-service training either in Cameroon and abroad (43 per cent and 23 per cent respectively), that is the need for practical training was found wanting at secondary and higher education levels.

Resolving inconsistencies

Regretfully, one observes increasing inconsistencies in Cameroon between thought and action. Findings at the theoretical level are never implemented widely enough among the population. Action must follow words. There is an urgent need to resolve existing contradictions in the higher education-research-industry relationship if the industrial sector is to contribute meaningfully in the development process. To do so, it is necessary to modify the structure of education; and harmonization is necessary even though the survey by Sanyal indicates that only 27 per cent of the workers thought a restructuring of the educational system was necessary. Budgetary allocations should be stepped up, a task which depends not only on the Ministries of National and Higher Education, but also on the government and private sector in general.

The technological and scientific manpower capacity of the country cannot be improved and increased if the present discriminatory relationship between the various disciplines continues to exist and if the poorer groups do not play a greater role in society, i.e. if the gaps separating the poor from the privileged group, the disciplines of letters/law

from science subjects, and white collar and blue collar activities are not substantially reduced or totally eliminated.

It is not proper to emphasize the role of education as a forge for development while the education system -- split up into sub-systems of Anglophone/Francophone patterns with conflicting aims -- accentuates the social differences within society. It is thus necessary to strongly advocate as a priority educational harmonization enforcement for the country, so as to improve its potential to develop manpower resources.

There is a need to accelerate the reform of the education structure to ensure greater efficiency, qualitative and quantitative output of human resources and to take advantage of S&T advances in other parts of the world. Currently the educational policy is one that trains an army of dependence, that is, it is creating needs rather than responding to needs; technical education is neglected and there is no priority given to science education. Technical education is the bastion of the industrialization process; hence, the industrialization of an underdeveloped society requires in the first place the establishment of an engineering sector.

The transfer of technology is not enough and indeed not even the main issue, which is that of the development of an indigenous technology base. The establishment of the oil industry is a major breakthrough in the industrialization process. Industrialization is a process of economic development where an increasing proportion of home resources is mobilized to establish a technologically up-to-date and diversified economic structure. Such an economy is characterized by a dynamic industry producing both consumer goods and the means of production. This approach could be called the central development strategy which involves the government, education and the productive sectors. The gaps between these three can not be closed unless there is some way of requiring users of technology to employ the local manpower available.

With regard to training and related issues, a number of aspects should be taken into account:

- an objective and realistic debate as to the kind of society the people want to construct; the role of education in the society and its broad aims and guiding principles;

- reformation of the education system so as to bridge the gap that divorces it from reality, making it a component of the development process, recognition of the links between real life and education for socio-economic transformation;

- a review of the development strategy in practice and a rigorous planning of scientific development to reflect more the acute and urgent needs of society.

As a direct result of the technological gap, the inherent policy inconsistency and low productivity, the country is unable to derive much from its national resources. Cameroon remains a victim of the dictates of foreign investors since the development priorities of the country were wrong to begin with and have contributed to numerous socio-economic problems.

To begin with, the education and scientific systems continue to suffer because of the lack of sufficient investments in infrastructures and human resources development. Unstable forms and inconsistent policy approaches, organization and financing have destroyed the establishment and continuation of long-term development perspectives. The pace of research as well as the acquisition of equipment is slow, and of course, dependent among other things on the development of external trade -- the earning of foreign exchange.

Because of this negative list one finds at the company level, a growing lack of trust in the scientific and technological potential within the country; hence, Cameroon technological know-how is under-rated. It involves less effort for some companies to find solutions for their technical problems with the use of foreign manpower and technological equipment than to search for development possibilities locally. This is because the educational structure and policy approaches does not establish a linear connection between education, research, innovation, technology and production; and in no way does it in fact encourage the improvement of endogenous technology or the manufacture of domestic products. The dependency of the country on the North means that Cameroon has little freedom of choice. That attitude and relationship has to be reversed. Education and awareness creation is an important instrument in this context. Only an enlightened public can bring out effective and meaningful development.

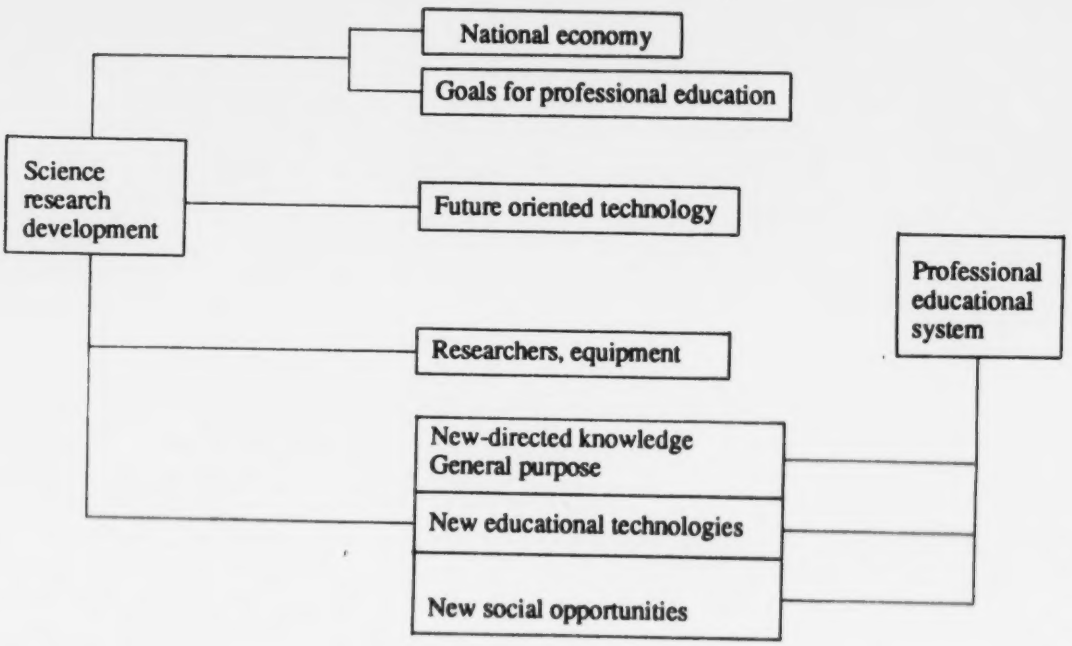
Changes in curriculum structure

Changes in the educational curriculum are necessary and should radically link education or training to the productive sector. Secondly, there is a need to establish a national Committee for Education, Research, Technological Progress and Industrial Productivity to thoroughly examine the mechanisms for relating education to industrial activities and for the maximization of the natural resources of the country.

The national body responsible for education, scientific, technical and industrial activities (ESTIA) should establish a system responsible for the realization of activities by means of commissioning, financing and providing motivating stimuli for ESTIA.

A planning and selection system should be charged with the duties of selection and implementation of themes for research and development with intensified involvement of the industrial sector, to encourage eventual emergence of a self-managing self-financing and independent enterprise. This should act as an endogenic force on innovation and as a long-term plan for scientific and technical advancement. Some of these changes could include appropriate mechanisms to establish a government-education-industry relationship; the establishment of petroleum studies in higher educational institutions as well as encouraging such studies in secondary/technical colleges, and creating infrastructures to organize and develop R&D activities in the country.

Table 2. The linkage of science/technology and the educational system



Stimuli

Apart from new educational developments needed to link education to industry, additional incentives are necessary to stimulate interest in the practical use of the results of research activities. One reason for the current undesirable separation between education and industry is Cameroon's failure to devise an effective way to transfer technology from the laboratory to industry. So far, the educational system does not permit/encourage the growth of such enterprises so as to contribute significantly to the national economy; nor have the policy makers devised effective ways of transferring science and technology (S&T) results into large state enterprises. Consequently, Cameroon can only expect to see a widening of the technology gap with the industrialized nations and a growing lack of vitality in its high and medium technology industries.

The sharp dichotomy between pure and applied science imposed by the educational and development strategy of the country has in retrospect cost the society dearly. For example, most research establishments have had and continue to experience a long period of turmoil which has left its participants exhausted and with no incentives to innovate or link their research results to industrial productivity. The few researchers, scientists and engineers are made to conclude that society does not value their contribution to societal change and development. Not much has happened during the past decade or so to change the fundamental deficiencies in the country's science/technology machinery or education, research and industry relations for the simple reason that resources and a true willingness to change the situation are lacking. Fortunately for the country, a massive brain drain has been averted due to the current economic recession in surrounding countries, but given the opportunity, it would do so and present a serious dilemma for endogenous scientific activities.

Future prospects

In view of what has been said above, and that the role of education and training in Cameroon has yet to be thoroughly and critically defined and studied, for the moment, the main conclusion is that the educational system of the country is not tailored to meet the needs of the industrial sector. The oil industry in particular has been forced to establish a training scheme to respond to its immediate needs. Conversely, the oil industry has no direct impact on the growth and development of the education system and cannot therefore influence a readjustment in the existing educational curriculum. If the present confusion persists in the country as a result of the growing inconsistency in the educational system, the organization of research and development and eventual industrial take-off could be delayed. In other words, high-tech industry (like the oil industry) cannot be expected to flourish in Cameroon within the framework of its own manpower resources and capability with the consequence that the country is doomed to be a backwater in the high technology drived 'third industrial revolution'.[8]

Inconsistent educational policy approach and development strategy continue to cripple day-to-day scientific activities and this in turn contributes to the demoralization of engineers, researchers, technicians, and scientists. It is true that a high-tech specialized sector like the oil industry cannot just depend on the educational system and output of manpower for its needs; an inhouse training policy is required to meet pressing and specific needs. However, the secondary and higher educational output provides the bastion of needed manpower as the first stage for further specialized training. That is why secondary technical schools, the polytechnics and university science faculties should be strengthened and expanded to provide manpower for the industrial sector.

The bulk of secondary schools, 70.8 per cent (technical stream) in the country are privately owned -- the expansion of these institutions is greatly influenced by social demand and the immediate benefits to the owners. That is why the public sector must redouble its efforts to produce young citizens with technical qualifications. The City and Guilds Certificate; the Higher National Diplomas in addition to other technical qualifications should be encouraged. Currently, the higher education system produces few science and technology graduates since it also experiences enormous problems in giving enough practical training. The Advanced Technical Institute, currently an elite establishment as regards resources, comprises only 2 per cent of the total student body. Generally, this institution should provide the bulk of high level technical manpower needed in the oil industry and other high-tech industrial establishments.

The problem that plagues the oil industry in Cameroon is that of paucity of participation -- that is, the industrial sector does not participate in the decisions which affect the educational curriculum of the country and that very frequently when they do participate they have no authority to do so, which is the prerequisite for making participation meaningful. The industrial sector remains marginalized and that is why the establishment of a government-education-industry advisory board is necessary to stimulate meaningful co-operation and participation from the private sector.

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8. See John W. Forje (1989), Science and Technology in Africa. Longman London.

It is not necessary that new institutions should be established but existing ones restructured to meet challenging needs as well as redress existing problems and constraints[9]

Perhaps the policy/strategy adopted by Korea in establishing the Korea Technical Qualification Testing Agency could be a good example for the Cameroon oil industry in particular and the industrial sector in general to implement within a Cameroonian environment. It would help establish a roster of people with specialized skills gained in industrial training for employment in certain posts of crucial importance or requiring specialized skills. To start, the infrastructure of SONARA could be used to promote training, research and development in the oil industry.

An integrated approach (industry-education-oriented-training) should constitute the basis of a new education curriculum with the industrial sector playing a fundamental role in the formulation and implementation stages of the policy.

Isolation of scientists, engineers, researchers and technicians from the mainstream and thrust of the development process, and difficulties in commercializing research results due to compartmentalization within and across industries and of the overall industrial strategy of the government, has to be radically addressed before S&T and R&D activities can become the engine of growth for an industrial take-off.

As a late-comer to the industrialization process, many advantages exist for Cameroon to avoid committing the same mistakes as earlier industrial nations. The knowledge and technology exist. How can Cameroon exploit and adapt existing knowledge to its own environmental setting? What is essential in the entire exercise is to initiate a radical domestic reform process. Any form of economic and educational reform must pay due consideration to the need for a domestic order, to a rapidly changing world environment and relationship in the modernization process and co-existence between nations.

In this context, the function of joint ventures -- where greater emphasis is placed on learning by doing, i.e. linking education to industry, and establishing links between R&D and between S&T&E and the production sector, as opposed to direct technology transfer, as is the case now, should be explored. What is the likelihood for this new approach succeeding in Cameroon? What modalities could ensure success? Above all, why should a new approach not be tried? The challenge facing Cameroon in the next two decades is specific and requires a specific response particularly from the educational sector and physically marginalized areas.

Conclusion

A common thread in this discussion paper is that better S&T performance for better economic performance and socio-economic transformation is closely linked to reforming the education system of Cameroon per se. But a re-evaluation of the education system without radical changes in the development strategy would have little or no impact on the industrialization process. A common opinion is that importing technologies without a sound

9. John W. Forje (1989), Science, Technology and Development Policy in Cameroon, Lund-Sweden.

endogenous capacity and capability will have no impact on S&T and R&D activities in the country -- Cameroon will only continue in the backwater of technological dependence and underdevelopment. Therefore, there is the need to revive the education system to guarantee rapid innovation in industry and increase productivity as well as provide basic human needs to the entire population. For this, more radical changes in the education and economic management systems are needed.

Of course, educational reform will produce organizational and managerial changes that cannot presently be anticipated. Human nature being what it is, it is sometimes slow to take up anything new. But these changes in the long run would be of maximum benefit to the country. This is a choice we have to make here and now. Knowledge is being lost.

The failure of much of our development strategy, however, points to several important lessons for the future. What is clear is that experiences elsewhere of education-research-industry co-operation show the need for the collective organization of interest groups and these can only be successful where public and private as well as individual efforts favour and work towards change. An education system that is innovative is a healthy one. As with the bare foot doctors of China and the Japanese economic miracle, Cameroon can also generate its own economic and industrialization miracle. The potential and possibilities for such a transformation exist within the country. But the process of harmonizing the education system and of linking education to the productive sector requires political will and broad radical change of old attitudes. Above all, it requires an acceptance that this will all take time, that errors will be committed and adaptations will prove necessary.

Chapter 11

Small-scale enterprises: development and the role of education and training

by Anthony Nforba Nchari

I. The concept of the small-scale enterprises

During the last decade, most African governments and their counterparts in other third world countries have developed enormous interest in promoting small-scale enterprises as a vehicle for promoting industrialization and accelerating development in their respective economies. A number of efforts and measures have been put in place to enable the attainment of this goal. Cameroon, for instance, created the Centre for Assistance to Small- and Medium-sized Enterprises (CAPME) and the Guarantee Fund to Small- and Medium-sized Enterprises (FOGAPE) as technical instruments to encourage private domestic initiatives. Some Governments and development-oriented NGOs in the industrialized countries as well as UN specialized agencies have been making significant contributions towards promoting small-scale enterprises in developing countries.

The definition of what constitutes a Small-scale enterprise (SSE) has logically been the starting point for the identification of enterprises that should belong to this category, for the purpose of their benefiting from promotional activities. However, no universally accepted definition has so far emerged. One study undertaken by the Georgia Institute of Technology, USA, identified more than 50 definitions in 75 countries (Neck and Nelson, 1977). The problem of an adequate and operational definition of the SSE stems from the fact that most definitions appear to be governed by the interest of the perceiver, the purpose of the definition and the stage of development of the environment in which the definition will be employed.

An overview of the wide range of definitions reveals the amount of capital invested, the number of persons employed, the production capacity, the type of enterprise and technology used are the most prevalent criteria. Mauritius, a country well-known for actively promoting Small-scale enterprises (SSE), defines SSE as one with a maximum capital of Rupees (Rs) 300,000 (equivalent of about $US17,250) and employing a maximum of 25 persons. Ethiopia emphasizes the size of capital as basis for classification setting 1,000,000 Ethiopian Birr (equivalent $US 500,000) as the ceiling to be considered small. In her capital-oriented definition, Cameroon merges both the Small- and Medium-scale Enterprises (SME) in search for a definition setting the upper limit of FCFA 500,000,000 (equivalent $US 2,000,000) to be considered as SME.

From these examples, one can draw the logical conclusion that the problem of defining the SSE, no matter the criteria used, arises when attempting to set an acceptable upper limit for the definition, given the fact that there is no lower limit. Whilst the Ministry

of Labour officials would tend to emphasize the number of people employed as the most pertinent criteria, manufacturers tend to emphasize the type of technology used or the maximum levels of capital used for production. Traders use the ceiling limit in the sales volume as the best criteria whilst service personnel view the total number of customers as the best criteria for defining the SSE. A combination of criteria, as in the case of Mauritius (capital and employment), seems a more acceptable approach since it takes into account other relevant criteria. Even then, the problem of an adequate and operational definition of the SSE that is universally accepted cannot be resolved once and for all. This was the conclusion arrived at in a 1986 report on the Study on Small- and Medium-Scale Enterprises in the EEC member countries.

Given the varying perceptions of the SSE due to different interests and levels of economic development, there would be little or no justification striving to achieve a universally accepted definition. Each definition is important and acceptable in a given context. It is essential for the SSE development promoter to operate within each given context in undertaking SSE promotional activities.

What seems clear is that no matter the definition, given the country and context one can identify sub-divisions within the SSE sector. In an attempt to identify such sub-divisions, SSE's can be classified into 3 broad categories namely *the-Upper, Middle, and Lower level* SSE's. In the developing world, the description *micro-producers* is increasingly being used to refer to the predominant lowest class SSE's., i.e. the heterogeneous group of the extremely poor small producers of goods and services (World Bank/Urban Edge, 1989.)

One general characteristic of the SSE is that the owner or manager performs most functions undertaking general administration, procurement, sales and finance activities. The SSE can be found in any area of business activity where enterprising people have spotted business opportunities. It can be anything from a shop, farm, carpentry, workshop, hair dressing saloon, a tailor's establishment, a restaurant, a small printing press to a small manufacturing concern.

Small-Scale Enterprises include the informal business sector i.e unregistered enterprises operating in a variety of activity areas without permits or licences. This heterogeneous group of very small producers or traders existing outside the formal sector includes hawkers and young people involved in fishing, weaving and technical work and vehicle repairs. The absence of regulations and registration formalities that characterizes this sector, suggests the informal SSEs to be dominant in Sub-Saharan African countries. Comprehensive data is not available to support this claim. However, a World Bank study undertaken in one of these countries revealed that only 1 out of 70,000 small businesses was registered. In Cameroon the dominance of the informal SSE is readily observable in the towns.

II. Small-scale enterprises and the development of African economies

Most Sub-Saharan African countries are currently facing serious economic problems demonstrated by the declining Gross National Product, rising levels of unemployment at an alarming rate, increasing external debt, a perpetual external trade imbalance vis-a-vis their

industrialized trading partners and the overall substantial drop in the standard of living. Their greatest concern is getting out of this phenomenon that is popularly known in Cameroon as the 'Economic Crises'. It is now widely accepted that the promotion of Small-Scale Enterprises (SSE) is one of the most reliable approaches that would solve or at least alleviate the deteriorating African economic situation. The Lagos Plan of Action by the OAU Member States in 1982, which urges the creation of a network of small and medium scale industries, as well as actively promoting and encouraging the informal sector, is testimony of the recognition at the continental level of the important role of SSE in African Economic Development. But what is the possible contribution of SSE to economic development? Carr (1984) summarizes this possible contribution when pointing out that the characteristics of SSE's dovetail well with the socio-economic objectives of many of the developing countries. Generally, they are labour intensive, employment generating, capital saving and capable of operating on a decentralised basis in rural areas.

In countries concerned with the generation of thousands of new work places and with raising the incomes and quality of life of the poorer sections of the population, small-scale industrialization offers a far more appropriate alternative to industrialization strategies that emphasis large-scale, capital intensive and centralised industries, which until recently were favoured by development planners and practitioners.

Thus a major national benefit arising from promoting SSE's is job creation. Besides being labour intensive, the relative ease of entry and small scale-size, inter alia, makes SSE's affordable to most people, thereby enhancing greater participation by the population in business ventures. It is the SSE that generates the majority of employment for the urban poor and offers self-employment opportunities for the millions of unemployed youths and retired civil servants. Even those in employment that require a secondary source of income to make up for low incomes from the primary source, are involved in setting up SSE's. During the recent years of economic crisis, small firms in the informal sector have provided a growing share of jobs and output in Africa. This is currently estimated at 50% of urban employment and as much as 1/5 of the GDP in many countries (Elkan, 1988). In evaluating the development that Cameroon went through during the two decades 1966-86, the Sixth Five-Year Development Plan (1986-91), reveals that with equal investment, the informal sector created more jobs than the formal sector. Over 3,000 handicrafts small businesses are established annually in Cameroon. A higher rate of small business creation would be expected for barbers, hairdressers, carpenters, motor mechanics and hawkers.

SSEs are the schools for entrepreneurs that Africa badly needs as entrepreneurs are seen as the critical agents in the economic development effort. Entrepreneurs are frequently defined as people with initiative who have the ability to identify and evaluate business opportunities and to marshal essential resources to take advantage of those opportunities. They are people with self-confidence, foresight, imagination, analytical ability and specific skills in communication, delegation and organization. Small-scale industry provides channels for people with these attributes to take advantage of opportunities and to move to great heights in business. Some of the larger industrial establishments in West Africa began in the informal sector notably in the metal working trades, tailoring, and furniture making (Elkan, 1988).

A basic requirement for the rapid growth of any economy is capital formation for injection into the economy. As schools for entrepreneurship, SSEs do not only provide the basis for the formation of human capital, but also contribute to the formation of material capital. This is achieved through the proprietors own funds, reinvested earnings, personal savings and borrowings from relatives and friends. In Cameroon, the 'Tontines' or 'Njangis' are significantly growing in importance as mutual aid assistance groups for capital formation and channelling business earnings to finance member enterprises. Agreed amounts are periodically contributed by each member of the Njang tontine association and the total collection is given to each member in rotation. The total membership ranges from 10-50 persons and total collections have been anything up to 120 million FCFA depending on the composition, class and ability of the membership as illustrated by the table below:

Group capital formation for investment crude classification of per capita: monthly savings/deposits in Njangis/Tontines

Nr.	*Class (Income Group)*	*Range of monthly savings or deposits in FCFA*	*Range of total monthly collections for rotating Njangis with 12 members FCFA*
1	Low income - very small scale farmers, businessmen, low salaried employees, Subsistence farmers	1,000-5,000	12,000-60,000
2	Upper low Income Small-Scale farmers, businessmen, employees	6,000-25,000	72,000-300,000
3	Low Middle Level Income (small scale entrepreneurs commercial farmers, junior employees in public private sectors)	26,000-200,000	312,000-588,000
4	Upper Middle-Level (Medium scale entrepreneurs, commercial farmers, senior employees in the public and private sectors)	50,000-200,000	600,000-2,400,000
5	High income group medium scale entrepreneurs, senior employees in private sector and parastatals	200,000-500,000	2,400,000-6,00,000
6	Super class, big business owners, managers of large private enterprises and parastatals	500,000-10,000,000	6,000,000-120,000.000

In the absence of any systematic study undertaken nation-wide, estimates and groupings are based mainly on authors experience and contacts with some Njangi members.

Some of the Njangi's/Tontines for the big business group have grown so large that they could no longer efficiently function as informal groups and have had to be transformed into banks. The Banque Unie du Credit (BUC) and Credit Mutuel Camerounais (CREMUCAM), now operating in the cities of Douala, Yaounde and Baffoussam, have their origin as Tontines. CREMUCAM, a registered credit institution with FCFA 1,000 million as capital essentially finances member enterprises. It is understandable that with growing size problems such as management inefficiency set in. Haggleblade (1978) established the maximum limit for the efficient operation of a Njangi after which inefficiency sets in to be between US$20,000 and US$40,000. However, the vast majority of Njangis in Cameroon remain small and provide the most important source of capital for SSE.

In contemporary Cameroon, when banks are facing serious liquidity problems, the Tontines/Njangis are apparently the most important source of financing SSEs and even some medium/large scale enterprises. A major limiting factor of the Njangi system has been that, unlike the banks, access to credit is limited only to members and not to the general public. However, given the crude estimates of 50% of Cameroonians being members of Njangis, a significant-proportion of SSEs can be estimated to have access to credit. The tontine practice is widely spread amongst the dynamic business-oriented Bamileke tribe noted for its dominance in business. The tontines have here proven to the important capital formation centres for financing member SSEs and have contributed significantly to Bamileke dominance in the business sector.

Small-scale industries have the important developmental role to play as centres for technical skills formation. Besides, they can play a very helpful role in any well-planned policy to promote the diffusion of manufacturing amongst regions, and within regions. This diffusion of manufacturing could significantly reduce rural-urban migration by providing employment. Cameroon in its Sixth Five-Year Development Plan (1986-1991) acknowledges that her industrial and economic development will be increasingly dependent on the promotion of small and medium-scale enterprises (SSEs), employment generation and the unquestionable role they play in linking up regions which have made them remarkably instrumental to regional development.

Another possible major contribution of SSEs to development is the earning of foreign exchange through exports. Increasing production of local goods and services by promoting local SSEs can also reduce imports and save on the badly needed foreign exchange. Besides, the dynamism and competition within the economy accelerated by the SSE promotion is likely to significantly contribute to a country's self-reliant development.

Problems of SSE's in Sub-Saharan African (SSA) Countries

A major problem facing SSEs in most SSA countries has, as aforementioned, been their inaccessibility to credit from the banks and other traditional lending institutions. Many have had to revert to money lenders and to be subjected to paying high rates of interest. Inaccessibility to credit seems a major factor militating against the expansion of SSEs. Some donor agencies have been attempting to assist in meeting the credit needs of SSEs. The Ford Foundation in Nigeria, for example, has a programme designed to give grants to grassroots associations to provide revolving loans to individual member enterprises. The Foundation, through PAID has also been organizing training programmes and providing

technical assistance to strengthen these grassroots associations. In Cameroon, the problem of credit to SSEs has, as aforementioned, to a large extent been minimised through the existence of Tontines/Njangis. Government efforts in a number of SSAs to reduce or solve the credit problem of SSEs, have included the creation of specific credit institutions. The Aid and Loan Guarantee Fund for SMEs (FOGAPE) was created by the Cameroon Government to cater for their credit needs. FOGAPE has so far not been successful in attaining its goals due to the long bureaucratic procedures and the fact that the SSES have been discriminated against in favour of their medium scale counterparts.

Another problem area is in the managerial sphere. Most of the small-scale entrepreneurs skills which to large extent is accountable for the slow progress in getting enterprises develop into flourishing business. Accounting records are hardly kept and when one is maintained, it is either insufficient or misleading and in both cases, does not reflect the true picture of the business. A large number of entrepreneurs and their personnel do not have adequate business oriented qualifications or experience. The lack of the marketing skills needed to get the products of SSEs to consumers and generate the needed income, also constitutes a serious problem. This is very visible in grassroots enterprises in Cameroon and Nigeria.

The problems in the managerial sphere can be solved by training and extension. But although there are quite a number of Management Development Institutions (MDI) offering a wide range of education and training programmes in the domain of business studies, the vast majority of their programmes are geared towards personnel with higher educational background. With the exception of The Gambia, having a highly developed system of extension through its Indigenous Business Advisory Service (IBAS) programme, SSEs in other African countries South of the Sahara hardly have access to any form of extension. Political pronouncements are not sufficiently followed by corresponding policies and actions.

III. The role of education and training

Many of the problems militating against the growth of the SSEs can be solved or ameliorated through education and training particularly those problems identified in the managerial and technical domains. The question is who should benefit and by which type of training? Two broad categories are identifiable, namely the *existing enterprises and potential entrepreneurs*. The overall objective of any education and training undertaken for the SSE's should be to raise the productivity of the entrepreneurs and employees. This should, ceteris paribus, lead to a significant increase in the production of goods and services in quantitative and qualitative terms.

The existing enterprises

These are those entrepreneurs who are already actively engaged in business and have set up enterprises that fall under the category of the SSE. The training should be directed to the entrepreneurs themselves and their employees. In view of the fact that the required knowledge, skills and attitudes (KSA) of the entrepreneurs and staff would vary from enterprise to enterprise, depending on the educational backgrounds and the experiences of the entrepreneurs and the employees, it would be imperative to first undertake a Training

needs analysis (TNA) for each enterprise, before designing and implementing the training programme. The TNA exercise would require an analysis of the tasks and functions being performed by the entrepreneurs and the employees, and a determination of the KSA gaps. The training programme designed will then be tailor-made.

For each enterprise the global problems of existing SSEs already mentioned included the inaccessibility to credit, the lack of managerial, accounting, record-keeping and marketing skills. The problem of inaccessibility to credit is a *structural one* that requires creating credit facilities or institutions that would provide the badly needed credit by the entrepreneurs and not necessarily training. Training would, however, be required where the entrepreneurs or employees lack the skills to manage the credit granted or are not aware of the sources of finance, as is often the case with group business. The rest of the problems mentioned above, viz managerial, accounting, record-keeping and marketing, require specific KSA and are thus amenable, in varying degrees, to education and training. Based on the KSA gaps identified in each of these areas, a training programme can be-designed and implemented after undertaking a TNA.

Given the large numbers of SSEs, it would be difficult and unrealistic to design training programmes specific to a particular SSE. However, since many of the problems and the required KSA are likely to cut across the target population of SSEs, it would be necessary to design and implement training programmes in critical areas that are a frequent and common need such as record-keeping. The design of a training programme in this domain, taking into account the global gaps of SSEs, and making it adaptable to the very specific needs of each SSES, would not be out of place.

Based on it experience in working with SSEs, the Pan African Institute for Development West Africa (PAID-WA), Buea, Cameroon has identified the following subject areas as essential, though in varying degrees, for SSE education and training:

- Basic record keeping/financial management
- Organizing and managing production
- Marketing
- Business communications
- Pricing and costing
- Small business relations with financial institutions
- Credit management, investment appraisal, income
- Generating activities/entrepreneurship, and
- SSE extension services.

Training could be organised as short courses ranging from 1-8 weeks in the classroom, or on-the-job, through extension. It is essential that training is a practical as possible and should adequately address the identified SSE needs. Training, through extension, would require the trainer or extension agent to go to each SSE and give on the spot technical assistance. Extension services could include:

(a) *Assistance in*

- All aspects of management
- Record keeping

- Domestic and export marketing
- Materials procurement and stores management
- The choice of technology
- Explaining government regulations if any, and dealing with paper work relating to them.

(b) *Advise on potential sources of finance*

(c) *Quality control and standardization, particularly to promote exports.*

Such outreach programmes have, from experience, been more effective than even the practical classroom training, based on practical exercises. The training and visit system, which has been highly successful in the agricultural sector, can be modified for staff of SSEs in the industrial sector. For both types of training, trainers or extension agents with the relevant knowledge and skills would be required. Programmes requiring attitudinal change, such as poor attitude to clients by sales staff, are likely to be more difficult to design and deliver than those requiring knowledge and skills.

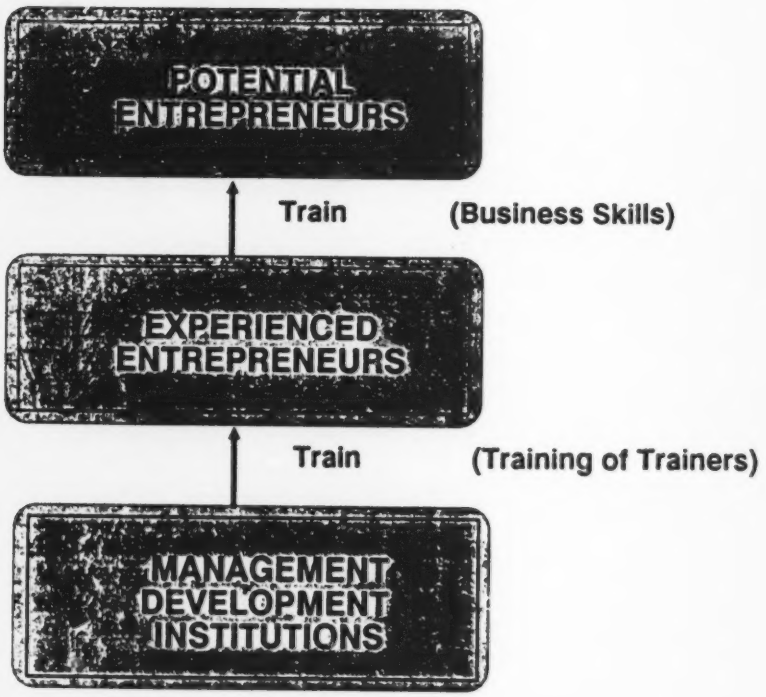
Training for potential entrepreneurs

Future or potential entrepreneurs here refers to all those who currently have no enterprises but have the intention of going into business. This category includes the millions of unemployed people in Sub-Saharan African countries, notably school leavers, university graduates and retired civil servants. It also includes all those already in employment but whose incomes are hardly able to sustain their families and they are consequently looking for additional income sources. This last category of the comparatively 'better off' is rapidly growing particularly in countries such as Sierra Leone, Zambia and Uganda where the currency has been significantly devalued and salaries have not been adjusted to meet the seemingly astronomical prices.

Given the virtual lack of business experience by the members of this category, the training approach has to be different from that applied to those already in business. Although the objective of the training should be to give the potential entrepreneurs adequate business management skills, emphasis should be on enabling them to minimise or avoid the bitter mistakes by successful entrepreneurs, whilst learning from those experiences that contributed to their success. Successful entrepreneurs therefore, would seem to be the logical trainers, for any training programme designed for potential entrepreneurs. Successful entrepreneurs do not have the training skills required to undertake the training. Designing and implementing a Training of trainers (TOT) programme for the successful entrepreneurs, to give them training skills would solve the problem of their lacking these skills to successfully undertake t training.

Many management development institutions (MDIs) and other relevant institutions are in a competent position to organise the proposed TOT selected for successful entrepreneurs. This thought is illustrated in the figure below.

Model for the training of potential entrepreneurs: an incubator approach



An important pre-condition for the success of a programme designed to train potential entrepreneurs is the careful selection of participants to obtain the right candidates. During the interviewing criteria, such as a minimum level of literacy e.g. First School Leaving Certificate, demonstrated interest for business, seriousness of purpose demonstrated by some savings earmarked for setting up the business, the desire and ability to contribute to the costs of-training, practicability, can be used to select the right participants.

A training programme for potential entrepreneurs could be organised on a pilot basis and a TNA undertaken for the selected trainees. The TNA would be the basis, not only for formulating the training objectives and determining the content, but also for selecting the appropriate successful entrepreneurs who would be the trainers after the TOT programme.

IV. Appropriate policy formulation and implementation: as basis for small-scale enterprises promotion

Small-scale enterprises cannot successfully perform their already recognised role as important instruments for accelerating economic development in Sub-Saharan African countries, if they are not backed by appropriate and adequate policies. Such policies will, however, be of little value, if they are not followed by their appropriate and adequate implementation.

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Policies which facilitate lending to SSE by the traditional credit institutions or which create specific institutions to cater for their credit needs are likely to solve or reduce the credit problem by assisting SSEs to have access to the sources of credit. Although some African countries have formulated such policies and designed programmes to implement them, the results have been far from satisfactory. This has, to a large extent, been due to poor programme implementation. Cameroon is one such example. SSEs have rare obtained loans from FOGAPE as mentioned above. Although the current Sixth Five Year Development Plan (1986-1991) attended to this problem by reorganising FOGAPE, the impact has so far been negligible.

Policies which enhance the availability and efficient use of inputs would also be of crucial importance. The regular supply of inputs avoids the occurrence of stock-outs and ensures the continuity of production. Subsidies and policies which ease large scale production or importation of in-puts are likely to reduce unit costs of inputs and make the SSE's more competitive. Many SSE countries are having serious foreign exchange problems and for these countries a policy preference, which favours the SSEs in the allocation of the limited foreign exchange will facilitate the procurement of the necessary imported inputs needed by SSEs. A major policy requirement here would be one favouring export-oriented SSEs.

Institutionalised government policies and programmes are also necessary in such areas as regulations limiting imports of products locally produced by SSEs in both the urban and rural areas, and increasing the range of marketing opportunities.

One key policy area, which is virtually absent in most SSA countries is in the domain of education and training. The noted exception are SSE's in the agricultural sector, which in most SSA countries are attended to by a large contingent of extension staff. The available management and technical training institutions hardly cater for the training needs of the SSEs. The continuous upgrading of-skills of SSE personnel as the basis for greater efficiency and increased production will only be achieved if relevant policies and accompanying programmes are put in place. The role of extension for regular technical assistance to the SSE has to be emphasised. The thousands of agricultural/extension agents, attending to farmers in the villages of Cameroon, has been a major contributory factor to that country's, agricultural success story. The Ministry of commerce and industries may achieve a similar success story, only if relevant institutions are created to train and make available adequate extension agents in the SSE commercial and industrial sector. This would seem to be a major requirement for the attainment of Cameroon's goal of industrialization.

Summary and concluding remarks

Most SSA countries have recognised the fact that their desire for rapid economic development can be satisfied through the promotion of SSEs. The absence of a universally accepted definition of the SSE does not constitute a problem and should not deter any SSE promotional efforts as each SSA country can formulate her own definition based on her peculiarities and priorities. A number of -problems have militated against efforts to promote SSEs. Paramount amongst these have been their inaccessibility to credit and the lack of skills in the managerial and technical domains. Education and training as the basis for knowledge and skills acquisition, have been virtually absent for the SSE sector. There is the

urgent need to design and implement training programmes for both existing and potential entrepreneurs as an institutionalised and integral part of SSEs promotional efforts. A major requirement for SSE promotion is the formulation of appropriate and adequate policies favouring SSEs. These should aim at solving the major identified problems of SSEs.

All these measures would enable the SSEs to foster the development of the economies of SSA countries and would ultimately pull them out of the current economies crises. It is essential that SSA countries learn from the experiences of other countries. The role played by the SSE sector in such rapidly developing economies as Japan and the Republic of Korea should not go unnoticed by SSA countries. Their experiences provide useful lessons to SSA countries.

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Chapter 12

Vocationalization of secondary education: the case of Cameroon

by Joseph N. Ngu

In the past three decades Cameroonian society has changed immensely, and, with it, the face of education at the primary, secondary, post-secondary and higher levels. The knowledge base has grown as no one could have imagined, and science and technology are seen as an important factor in the development of the economy. After independence, schools gave priority to the training of high-level specialists in so-called 'development areas' to replace departing colonial expatriates, but it soon became apparent that the lack of competent middle-level workers -- skilled workers and technicians -- constitutes an important bottleneck for development.

In response, and since the early 1970s, institutions have developed to teach special skills and to train people in the arts or sciences for teaching these special skills. These range from secretarial and vocational/trade schools to technical colleges, high schools, post-secondary and polytechnical schools with the main objective of training for jobs in the commercial and industrial sectors. Indeed, the choices confronting today's students are much greater than at any time in our history. Until the 1970s, the efficacy of the educational system in preparing students for jobs was not questioned and was based largely on manpower needs. It was obvious to the general public that more schooling meant better jobs; it was assumed that the educational system was 'planned' to ensure that manpower needs would be met as the need arises.

In the coming decade the relationship of education and work will increasingly come under scrutiny. Vocational technical secondary schools are now becoming almost commonplace, with over 75 per cent of technical school graduates enrolling in private general and technical colleges (CETGs) and many more continuing their studies in vocational evening classes. Manpower shortages (especially skilled workers and technicians) are evident in certain occupations and manpower surpluses in others. Vocational or technical education no longer ensures a good job, or, in some cases and levels, any job at all. Too many upper secondary and post-secondary school graduates are forced to take jobs that do not utilize the material they have studied. Others prepare themselves in technical schools to rejoin general academic education at higher levels.

Expansion of education and the numbers eligible to participate have made vocational and technical education an increasingly costly proposition. In this period of economic crisis facing Cameroon with diminishing resources for education and increasing competition with other sectors of the economy, technical education is being criticized as being of dubious quality, over expanded, inflexible and non responsive to labour market requirements, and not cost-effective.

Another but related change with which educational institutions (at all levels and types) have to cope with is the movement towards not only equality of opportunity but also towards the promotion of social mobility. Every Cameroonian should be able to choose any secondary school, college, post-secondary technical or professional school. However, since those entering vocational and technical education institutions (especially at lower levels) arrive with different and often lower competencies, costly remedial action is necessary. Little wonder employers are often reluctant to employ technical school graduates who must be retrained either on-the-job or through short courses for them to be productive. Finally, it is rather questionable how effective these schools are in promoting an industrial culture.

The issue of vocationalisation of secondary education and the contemporary structures and problems in Cameroon therefore cannot be properly understood or explained without taking into account the overall historical constraints, that is the nature of colonial dependency. The models of French and British systems introduced into various parts of Cameroon, although with divergent policy objectives (assimilation doctrine for the French and evolution through 'indirect rule' for the British) determined from the outset what constituted valid knowledge and consequently what counts as valid schooling (Le Vine, 1961). On this basis the parameters of the formal schooling system were determined and these defined the abstract nature of its programmes, structure, contents and methods. In fact, the formal school was (is) more or less identical to the European type of academic education.

It is a common argument in the literature that before the 1960s, Africans aspiring to jobs and positions like those held by Europeans in colonial society sought an education similar to that enjoyed by members of the elite (Foster, 1965, Anderson 1970). The farther the colonized man went in the educational pipeline, the more he was imbued with the ways of the colonial powers. And the more these ways suffused his life, the more he was assimilated or evolved and, for this reason, the higher he could rise in colonial society. Many Africans felt that attempts to gear educational systems to the traditional and/or rural environments (as in the Phelps-Stokes Reports: 1922 and 1925) were means of perpetuating the inferior status of their race. They quickly observed that Europeans in the colonies were emphasizing subjects for themselves that were different to those they were being taught. Thus there emerged a gradual appreciation by the population of the relationship between the Western educational model and occupational recruitment, social status and material well-being.

This historical expectation of what constitutes valid school knowledge and a legitimate process of schooling has proved the major barrier to vocational education and has been hard to break. It is the concept of what is legitimate education in form and content. This is the key issue. In fact 'education' is seen in its most restricted sense to mean academic education so that anything vocational is likely to be resisted. Hence, the origin of its low status in Cameroon.

II. The development of vocational and technical schools

Colonial attempts to vocationalize education in Cameroon had as its prime objective to reorient student attitudes towards rural life. With independence, the objectives of vocational education were broadened and included not only alleviation of unemployment and halting of urban migration, but more importantly the transmittal of skills and attitudes

- drawing up of school location maps;
- increasing intake capacity;
- improved links with professional circles;
- improvement of private technical education; and
- improved teacher training and enhancement of the status of teachers.

In reality however, precise and qualitative educational choices have not been effective, and nothing is said in the plan concerning the implementation of the above objectives. The only achievement seems to be demographic... that is the quantitative expansion of students at all levels of the system with little or no improvement in their internal efficiencies. In addition, no policy statements have been made or implementation decisions taken to integrate basic skills preparation throughout the curriculum of both levels of secondary vocational and technical school. Sporadic attempts in individual schools, and the prepondancy of theoretical courses over practical ones seem to indicate that the real objective of this type of education is the preparation for university studies. Concerning human resources, public technical schools are quantitatively small (there are only ten public technical schools in the country) and their distribution among the disciplines is biased in favour of the humanities. As for material resources and physical equipment, they are insufficient: teaching materials and specialized classes are lacking (laboratories, workshops, libraries etc.).

If vocational and technical secondary schools are to succeed, then basic skills preparation must be integrated throughout the vocational curriculum and the focus shifted to the development of the individual student, that is preparing the student for a lifetime of work in a dynamic economy. The objectives in emphasizing basic skills in vocational and technical schools are that the student will have nothing to envy in regard to academic schools; he will have the ability to transfer skills and knowledge effectively when economic conditions change and he is required to transfer from one occupation to another in order to advance in a growing economy or to survive during poor economic times.

In assessing the effectiveness of vocational and technical education, we have difficulty in estimating the occupation-economic sector matrix not only because the relevant data is lacking but also because the probabilities of finding a job depend as much, if not more, on the macro-economic conditions of the country as on the quality or type of education provided. With the depressed economic conditions prevailing in Cameroon since 1987 the best outcome of Cameroon's vocational and technical education programme should be the provision of generalized job competence. Narrow skill training as is currently organized is no longer a suitable preparation for a changing economy. While we recognize that vocational and technical education institutions will continue to exist as a schooling structure parallel to the academic one, and the reluctance and resistance to vocationalizing the whole secondary school system will continue, we believe that any changes in the short run will have to focus on vocational and technical schools. These institutions will have to provide a broad-based training, emphasize general rather than specific training in order to be able to adapt and work effectively in today's labour market.

useful in employment. Instead of integrating vocational subjects in the mainstream secondary schools, it became necessary to establish a schooling structure parallel to the traditional academic school with a bias to vocational and/or agricultural subjects. In other words, these are vocational and technical education systems which run parallel to the dominant academic model. These schools are directed towards the creation of manpower for the socio-economic growth of the country, that is the production of employable workers with intermediate skills. Before we briefly describe the structure of vocational and technical secondary education and the type of vocationalisation taking place in Cameroon, a few comments must be made concerning the overall level of development of the education system.

In the last fifteen years up to 1986, the education system expanded at all levels. Primary education has expanded rapidly maintaining an annual growth rate of 4.5 per cent and nearly doubling the 1971 enrolment of 930,131 pupils to reach 1,795,254 pupils in 1986. The enrolment ratio at the primary school level increased from 89 to 107 per cent between 1971 and 1986 (MINPAT, 1986).

The evolution of enrolments at the secondary school level has been even more dramatic, increasing four and a half times between 1971 and 1986. In other words, the student population grew from 84,567 to 385,566 and maintained an average annual growth rate of 10.2 per cent (Table 1). Consequently, secondary school enrolment ratios have also increased, tripling from 7 per cent in 1971 to 23 per cent in 1986 (MINPAT, 1986).

On careful examination of Table 1 and the data on primary and secondary education in Cameroon, we reach the following conclusions:

(i) primary education has almost doubled (1.9 times) between 1971 and 1986

(ii) overall secondary education has more than quadrupled (4.5 times); general secondary education has followed the same trend; teacher training has expanded a little less rapidly (4.3 times), while vocational/technical education has increased 5 times in the 15 year period; it constituted about one-fifth of secondary education in the early 1970s and rose to one-fourth by the mid-80s.

Table 1. **Evolution of enrolments in primary and secondary schools**

Year	Primary	General	Secondary Technical	Teacher Training	Total Secondary only)
1971	930,131	65,360	18,277	930	84,567
		77.3%	21.6%	1.1%	100.0%
1976	1,146,437	121,054	35,601	1,572	158,277
	76.5%		22.5%	1.0%	(100.0%)
1981	1,443,728	180,248	59,290	2,282	241,820
		74.5%	24.5%	1.0%	100.0%
1986	1,785,254	291,842	90,666	4,058*	385,566
		75.6%	23.5%	0.9%	100.0%

* Figures with an asterisk are for 1985.

Source: Données générales de la scolarisation (various years). Service de la planification, de la carte et des statistiques scolaires, Yaoundé.

III. The structure of vocational and technical education in Cameroon

Formal vocational education and technical training institutions are structured at four levels: post-primary, lower secondary, upper secondary and post-secondary (non-university). The organization of vocational education and training is the responsibility of the Ministry of National Education, although as we shall see later, specialized technical training at the post-secondary (non-university) level is organized by various ministries. While there are private initiatives in the provision of vocational education and training at the lower (secondary) levels of the educational system, the State monopolizes provision at the post-secondary level, largely because the type of training given is more specific and specialized and consequently more expensive.

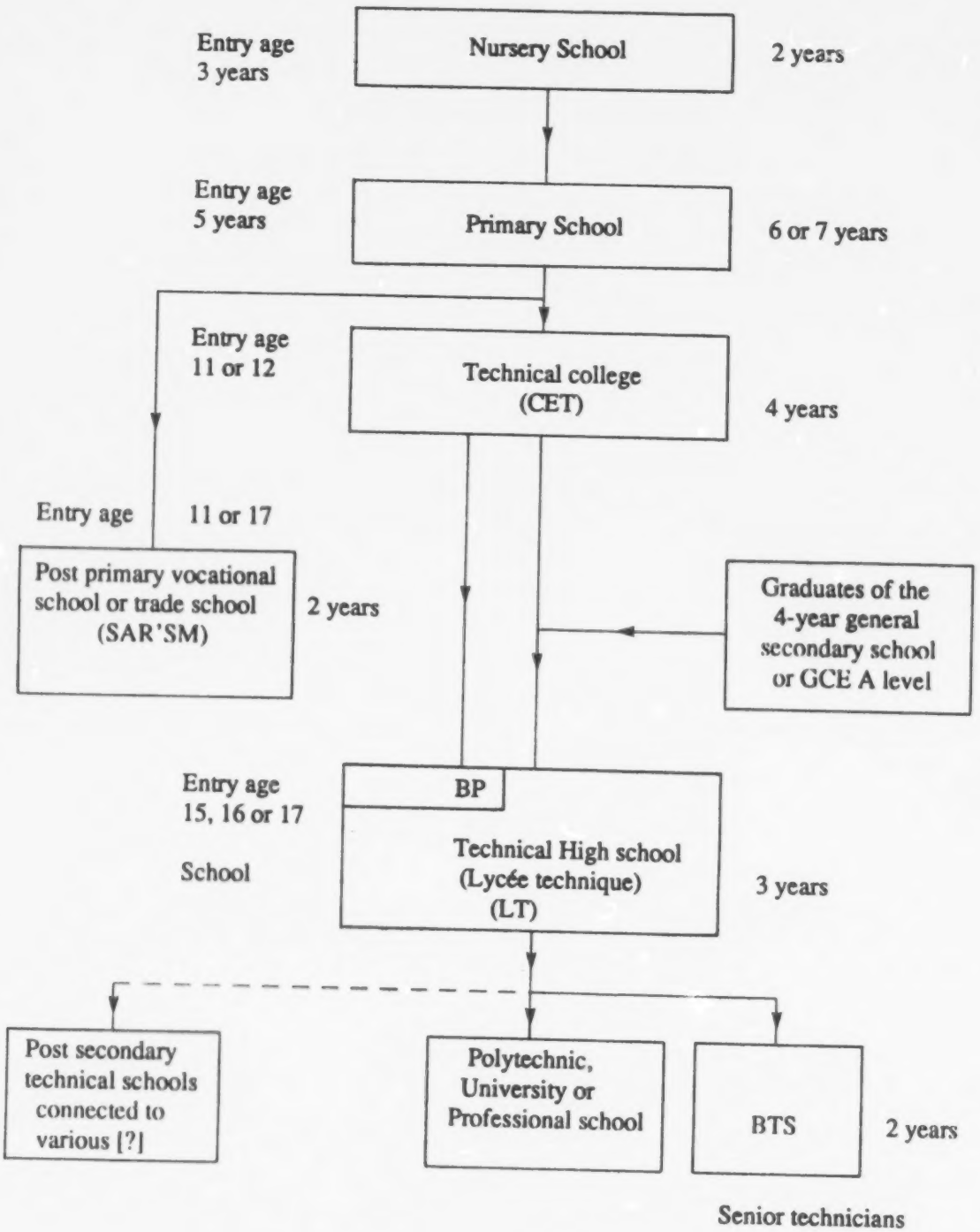
1. Vocational education and training (post-primary)

At the post-primary school level, children who fail to enter general or technical secondary schools continue their education in what is known as trade schools. Here they are offered, in two years, training oriented towards practical work in the rural community. These trade schools known as 'Sections Artisanales Rurales' (SAR) and 'les Sections Ménagères' (SM) consist essentially of two specializations: woodwork and masonry although new subjects including plumbing, automechanics and domestic science are increasingly offered.

Post-primary vocational education programmes were started with the objective of encouraging primary school graduates to remain in rural areas. To be admitted into SAR/SM (trade school), the student is expected to have completed primary school, to be between the ages of 12 and 16 years old and to pass an entrance examination organized by the school. The success rate has never gone beyond 60 per cent. At the end of training, an attestation is awarded and holders can enter the second year of technical college after passing an entrance examination.

The 122 Government-maintained post-primary vocational education and training institutions enrolled about 9,111 students in 1986/87. In 1989/90 this figure had risen to 9,340 students in some 124 vocational schools. The reason for this increase is that increasingly the students finish primary school early, sometimes at 11 and 12 years old. Graduating at 13 or 14 years old the students have nowhere to go. They are not employable because the law forbids the employment of children. They cannot start any type of business because they lack the capital and the banks and their family cannot give them the money because of their tender ages. A big proportion (80 per cent) go on to technical schools and the objective behind the creation of SAR/SM to produce the craftsmen and women for the rural community has thus failed.

Diagram 1. **Technical education in Cameroon**



2. Technical education and training at the secondary school level

(i) *Technical college*

Technical education and training is structured at two basic levels in the secondary school system: lower and upper secondary (or 1st and 2nd cycles). At the lower secondary school level, technical colleges provide a broad foundation of practical/technical skills and related theory as a preparation for joining the world of work as junior technicians or for more specialized training at the upper secondary level. The studies of four years (francophone system) or five years (anglophone system) prepare students for a range of professions in industry, commerce and households.

The Ministry of National Education is responsible for organizing technical education at both levels of secondary schools and about a quarter of the students are in government-maintained public schools. To be admitted, it is necessary to have completed primary school, to pass an entrance examination consisting of a language, mathematics, and an aptitude test. This examination is organized at the national level. Only about 30 per cent of the candidates succeed each year to enter technical colleges.

After four or five years of training at the technical college, the student sits a national examination. This examination consists of two types of tests: theory (French, English and Mathematics) and practice (aptitude tests). It is necessary to pass in the theoretical part in order to sit for the practicals. The successful candidates earn a certificate called 'Certificat d'Aptitude Professionnelle' (CAP) and holders of this certificate can sit for the entrance examination into technical high school or Lycées Techniques (LT) just as graduates from lower general secondary schools.

(ii) *Technical high school*

The technical high school (Lycée Technique) does attract and expects transfers from general secondary schools. It is designed for holders of the GCE 'O' Level or the BEPC from the lower (first cycle) secondary schools. As has been mentioned above, transfer from technical colleges to technical high schools is officially accepted, but practically unworkable and unrealistic. This is because the language skills of students, the level of training in mathematics, physics and design are very poor and the Certificat d'Aptitude Professionnelle (CAP) holders find it very difficult to compete with students from general secondary schools. The graduates of technical colleges could go on to a two year professional oriented programme called the Brevet professionnel (BP). This has a more practical oriented programme called the Brevet professionnel (BP). This has a more practical oriented training within technical high schools but only a tiny proportion of the students (about 2 per cent) are in this programme. The lack of space, equipment and teachers make it difficult to popularise the BP programme.

The industrial or commercial sections of technical high schools (LTs) lead after three years to either a 'Baccalauréat Technique' or a 'Brevet de Technicien'. At the end of their second year of studies, students can sit for the 'Probatoire' examination. In some technical high schools, in addition to their regular programmes, there are post-secondary programmes which lead to a special certificate known as 'Brevet de Technicien Supérieur' (BTS).

To be admitted in upper secondary technical schools or technical high schools (LTs), candidates must have completed lower secondary general or technical schools, be holders of one of the following certificates CAP, BEPC, GCE O Levels (4 papers), and pass a national competitive examination. Generally, the number of candidates seeking places in technical high schools are two or three times greater than available places. And the majority (about 90%) of those admitted come from lower general secondary schools. In 1986/87 about 22 per cent of enrolment in upper secondary schools were enrolled in technical education but only 10 per cent of lower secondary school leavers were entering technical education, while about 33.4 per cent were entering upper general secondary schools. Though the data is difficult to obtain, it is claimed that about 20 per cent of lower secondary school leavers join non-formal education programmes (on a part-time basis) while waiting to enter a technical high school or to get a job, and about 30 per cent join the already existing army of unemployed.

3. Technical/technological education at the post-secondary level

The Ministry of Higher Education, Computer Services and Scientific Research organizes technical and technological education at the post-secondary level although other ministries including Labour, Public Works and Transport, Post and Telecommunication, Social Welfare, Tourism and Agriculture have various types of post-secondary vocational and technical education programmes. In other words, post-secondary technical education institutions in Cameroon are all public institutions.

Technical/technological education takes three forms. Within the two schools that make up the Douala University Centre, the Advanced Technical Teacher Training School (ENSET) and the Advanced School of Economics and Trade (ESSEC), a short post-secondary course is given at the Centre for the training of industrial and administrative personnel. The 'Baccalauréat de Technicien Supérieur' (BTS) is designed for graduates of technical lycées. The BTS holder is considered as a senior technician.

The Advanced Polytechnical School (ENSP) was created in 1971 as an attempt on the part of the Government to supply high-level technical manpower. This school was destined to be the technological section of the University of Yaoundé and has two basic divisions, the long cycle (Division 1), which lasts for five years trains engineers, and the second cycle (Division 2) trains technicians in such fields as engineering maintenance, electromechanics, and other intermediary technical areas and lasts for three years. All students are admitted on the basis of a competitive examination after having obtained the baccalauréat. Whether the student is placed in the short or long cycle depends on his entrance examination results.

The short cycle (technician) or 'Ingénieur de Travaux' diploma is terminal. The holder cannot continue to the long cycle (engineering) or 'Ingénieur de Conception' programme. The short cycle is assumed to be more practical than the long cycle since it

produces readily employable workers. Unfortunately, we were informed that the short cycle programme is being phased out.

In 1980, there were 838 students in post-secondary technical institutions in Cameroon. By 1988/89 the total number of students had increased to 1,469 giving a growth rate of 7.2 per cent per year. Of the 16,281 students who graduated from the first and second cycles of secondary schools in 1987/88, only some 675 of them were enrolled in first year post-secondary technical education programmes. In other words, only 4.1 per cent of secondary school leavers entered technical and technological education. In 1988/89, some 50.5 per cent of enrolment in post-secondary education were enrolled in technical institutes and the polytechnical school. However, these figures are only indicative, some of the more specialized technical institutions which are attached to various ministries do not recruit students on a yearly basis, making it difficult to calculate and give yearly averages. Finally about a third of the total enrolment in higher education is in the scientific and engineering courses.

IV. The changing pattern of vocational and technical education

Mention has already been made of the development of vocational and technical education systems which run parallel to the academic model. In this final section we briefly discuss the changes that have taken place and examine if indeed vocational and technical schools are becoming more like academic schools in the provision of secondary education.

The necessity for secondary vocational and technical education in Cameroon has recently been questioned (Ngu, 1990). In addition Cameroonian educational observers decry the low status of these schools at all levels. They often argue that the number of technical high schools (Lycées Techniques) is small, the vocations/options open to students are narrow and inflexible, and the quality of education provided is not only costly and rigid but also inferior and outdated. Moreover, even among proponents, there is concern about the appropriateness of teaching one set of occupational skills which may be wasted if there is no immediate placement and training related employment.

The severe labour market problems resulting from inadequate basic skill preparation in secondary technical schools is leading to widespread concern. In response, the priorities of the Government concerning vocational and technical education as specified in the Sixth Five Year Plan (1986-1991) can be summarized as follows:

- modification of the structure of technical colleges;
- institution of higher technical certificate (BTS);
- reinforcement of the advanced technical teacher training college;
- renovation of existing technical colleges and high schools;
- re-orientation of post primary education;
- better knowledge of the labour market;

Appendices

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Appendix I

Synthesis of country reports

Introduction

The countries of Africa have matured and come a long way from the humble beginnings of attainment of political independence in the 1960s. This is evident from the 'State of the Art' reports on economic development, the restructuring of inherited education systems and the employment situation in the countries which have been submitted to the sub-regional intensive training course on education, employment and human resource development.

In the pages that follow an attempt is made to synthesize these reports so as to give the reader a broad picture of the sub-region and especially of the participating countries. The list of the countries reports and authors is given in the bibliography.

It should be noted that the synthesis draws mainly from the guidelines submitted to the participants for the preparation of these reports. It is divided into four parts, the first section consists of a brief overview of the structure and development of the economy and employment and the main linkages between the two entities. The pattern of the educational systems in the respective countries is described in part two. Part three addresses some feasible means of improvement of the fits between education and employment. The last part is a coherent summary with observations and projections for the future.

By and large, the individual reports provided specific answers to specific issues. In addition, the national materials gave a comprehensive data structure which permitted some form of broad conclusions the need for linkages between education, research and the industrial sector and in human resources development related issues.

In spite of the persisting economic crisis that has weakened many development programmes, there are notable successes in the region, particularly in the area of increasing the school infrastructures and the number of people in the educational sector at all levels. Africa has made tremendous efforts in establishing more educational institutions. However, more still remains to be done to radically reduce the illiteracy rate and to bring the marginalized majority into the mainstream of development.

Economic development

Culturally, economically and socially, the participating member states are heterogeneous. Thus diversity necessitates an analytical synthesis according to some form of grouping.

However, characteristic among the countries represented is the common denominator of a questionable national sovereignty and democratic rights and an urgent need to replace these underlying factors with a more humane policies and programmes.

As a result of external policy imposition, the level of dependency and growing social unrest which acts as strong mechanism to the revolutionary aspirations of the marginalized population, development is impeded since scarce financial resources are channelled towards growing militarization of politics.

The policies adopted by the states in question with regard in education, employment and human resource development very with the political and economic philosophies, the diversity of resources, the development strategy and the degree of industrial and technological advancement prevailing in each country out.

For the purpose of analysis, the countries may be grouped into three : high, middle and low income. This grouping does not reflect the actual realities of their development efforts. For example, a low income country could have a more progressive educational policy strategy and therefore allocate more financial resources to that sector than a high-income nation; a high income nation could focus more on industrialization and depend more on exogenous technologies as compared to a middle income country trying to address its technological and industrial underdevelopment through the generation and utilization of endogenous technological capacity and capability.

The high income countries, Cameroon and Nigeria are capable of attracting significant foreign investments due to the extent of their markets and resources potentialities.

Ghana and Sierra leone fall within the middle income countries; while Gambia and Namibia make up the last group. In addition to using these indicators, one can also apply the criteria of per capita Gross Domestic Product (GDP), share of manufacturing in total GDP, and literacy rate in the age group of 15 years and over. Also the structure of production and the debt burden can give quite an accurate perspective of socio-economic status.

Population wise, African countries in general have exhibited the highest population growth rates of any region in the world. Most of the participating countries with the exception of Sierra Leone registered over 3 percent annual growth rate. the figure of Sierra Leone is 2,6 per cent during the period 1986-90. Namibia has a population of 1.3 million. When a density of 1.5 persons per square kilometre making one of the most sparsely populated countries is the African continent. This overall figure is, however, distorted as approximately 62 per cent (800,000) of the people live in the northern regions (115,000) live in and around Windhock in the central region, while less than 0.5 percent live in the remaining areas of the country.

It is rather the high rate at which the population is growing throughout the continent that is of major concern. Whatever increases that could be attained in economic output were neutralized by even higher increases in population resulting in declining real incomes and standard of living for the large marginalized population.

The participating countries are members of the Economic Community of West African States (ECOWAS) Gambia, Ghana, Nigeria and Sierra Leone; with Cameroon belonging to the Economic Custom Union of Central Africa (UDEAC). Namibia has yet to find its feet with the likely possibility of joining the Preferential Trade Area (PTA) of Eastern and Southern Africa or the Southern Africa Development Co-ordination Conference (SADCC). These economic groupings constitutes an economic base for the socio-economic transformation of the member states.

Gross domestic product (GDP)

During the past decade the six participating countries witnessed a major economic recession. In the wake of a crushing debt burden, high interest rates, unpredictable deterioration in the prices of their exports escalating prices of imports and effective outflow of net financial resources and other related issues, these countries have not been able to achieve in the mid 1980s a per capital GDP level equal to those of 1970s. Four out of the five countries have witnessed stagnation decline.

Table 1. Countries ranked by 1980 GDP per capita, with 1986 GDP per capita and average annual GDP growth rate.

Countries	1980 per capita	1986 per capita	Growth rate
Cameroon	986	1,261	7.2
Nigeria	1,095	723	-3.5
Ghana	446	371	0.5
Sierra Leone	377	253	-4.1
Gambia	273	332	1.2
Namibia	na	na	na

(NA = not available)

Sources: IDEA-UNIDO Atlas of African Industry 1989. Vienna Austria.

The structure of production particularly in the manufacturing sector has not been a healthy one for these countries. Bearing in mind that these countries depend mainly on the agricultural sector for foreign exchange earnings. Where the industrial contribution has been high, it has generally concerned the mining and mineral sub sector which is characterized by minimal domestic processing prior to export. Industrial contribution to GDP, on the other hand did not exceed 24 per cent for most of the countries in 1986 except for Nigeria and Cameroon (25-40%); for Gambia and Sierra leone it stood within 10-25 per cent; for Ghana it was less than 10 per cent, Data is not available for Namibia in this area. It should also be noted that both Nigeria and Cameroon are oil exporting countries and as producers of crude oil, they have a different manufacturing and industrial activities.

On the whole, the structure of production remains unhealthy given the fact that manufacturing should provide basic goods for the rapidly growing population. Manufacturing also offers the possibility of raising income levels, reducing unemployment,

laying the foundation for technological take-off as well as providing input material for other economic sectors, which reduces dependency.

The contribution of the manufacturing sector to GDP shows that a Cameroon manufacturing contributed more than 25 per cent to GDP; for Ghana; Gambia and Sierra Leone 5-10 per cent and less than 5 per cent for Nigeria (See Table 2).

Table 2. African countries ranked by 1986 contribution of industry and manufacturing to GDP

Countries	Industry	Manufacturing
Gambia	8	7
Ghana	8	7
Sierra Leone	20	7
Nigeria	28	3
Cameroon	38	19
Namibia	na	na

na = Not available
Source : IDDA-UNIDO 1989 Atlas of African Industry Vienna-Austria.

Comparing Tables 1 and 2, it can be seen that Cameroon with a high average annual GDP per capita growth rate 1980-1986, ranks low in terms of the contribution of industry and manufacturing to GDP. A sectoral breakdown of Ghanian economic growth shows that all the sectors in 1989 had positive growth.

In Gambia the problems created by various unfavourable factors were worsened by inappropriate economic policies and administrative weaknesses. Agriculture in particular was seriously disadvantaged. Its contribution declined during the decade 1975/76 to 1985/86 from 34 per cent of GDP to 29 per cent. The dollar undervalued, leading to higher levels of imports and depressing exports. This adverse development made it apparent that drastic changes were needed in government policies. A task force was established in 1988 to review the situation and propose solutions. Thus a number of measures were proposed which formed the basis of the country's Economic Recovery Programme.

External debt burden

Both internal and external factors have contributed to the adverse state of development in the region. For example, the growth and volume of the external debts of the six participating countries like the rest of the continent has resulted from adverse past ten years. These external and internal problems continue to impede economic recovery ; exchange earnings which could have been appropriately invested in the productive sectors are continuously being diverted to servicing debts. During the past decade, debt payments rates have escalated in most of the countries; in some the ratio is currently running at more than 30 per cent of annual export earnings. Such a pathetic situation coupled with a slump in the global prices of many primary commodities on which these nations depend, created serious balance of payment problems. The outcome is a vicious circle in which the scarcity

of foreign exchange prevents many industrial undertakings. Widespread equipment breakdowns remain a common feature of the African industrial and manufacturing sectors that highlights the general and technological backwardness of the region.

Table 3. Total 1987 External debts, external debts per capita and debt service in selected countries

Country	Total external debt 1987 million US$	External debt per capita (dollar)	GNP	Debt service as percentage of exports GNP
Cameroon	5,136	475	4.8	28.8
Gambia	452	570	7.2	13.0
Ghana	4,350	265	3.7	17.1
Nigeria	30,486	299	3.9	11.7
Sierra Leone	823	214	0.6	109.8
Namibia	na	na	na	na

Source (1989) IDDA-UNIDO. Atlas of African Industry Vienna-Austria.

Ghana's total external debt increased from US$549.5 million in 1970 to an estimate of US$3.5 billion in 1989. Total debt as a proportion of GNP increased from 25.5 per cent in 1970 to a peak of 59.2 per cent in 1987 and declined to 55.2 per cent in 1988. the total debt to export ration increased from 108.3 per cent in 1980 to 345.5 per cent in 1987 and declined to 312.2 per cent in 1988 (K.A. Tufu, J. Dudu Anka Tsede et al).

Between 1975 and 1988 Gambia's external debt increased from less than SDR 10 million to SDR 208 million. By the end of 1985 the country's debt service payments had risen to 25 per cent of net export earnings. The situation further deteriorated and matters came to an impasse in 1985 when the Gambia fell into arrears with the IMF and the stand-by Agreement that was signed a year earlier was cancelled. (Bojang and Suso).

Nigeria's total external debt grew from N82.4 billion in 1960 to N488.8 billion in 1970 and it has been on the increase since then reaching a record of approximately US$30.5 billion (Ajayi and Amisu).

Sierra Leone's total external debt burden stood at 69.5 million (SDR 766 million) or about 38 per cent of the GDP in 1981. The debt service ration increased sharply to around 300 per cent total export earnings by 1985. This seriously weakened foreign investors' confidence and further eroded domestic confidence in the economy.

In the case of Namibia no overall balance of payments figures are available as movements of capital between Namibia and south Africa have not been recorded. Data for the balance of payments on the current account show a surplus through the period 1982-87 and in 1989, after a deficit recorded in 1988. Where capital account figures are available they show a net outflow of funds in the pre-independence years reflecting transfers of capital

to South African and overseas money markets, while investment inflows were adversely affected by the political uncertainty and stagnation of the mineral industry during most of the 1980s.

The debt burden of Cameroon is not different from the rest of the continent; it ranks second in the external debt per capita and debt service per GNP. Within the past five years it has also witnessed a crumbling of the banking sector leading to a general loss of confidence in the banks. The only indigenous Bank, (Cameroon Bank) was forced into liquidation together with other banks, BCD, SCB and BIAO due to poor lending policies and other interference from the government.

A new structure of global cooperation grounded in helping people mobilize for their own development is a promising approach capable of fathering more effective and responsive political institutions in developing countries.

So far, The structural Adjustment Programmes fashioned by the World Bank and the International Monetary Fund have not yielded the desired result. Even though the SAP is best described as the implementation of comprehensive shifts in macro and micro policies, both to respond to various shocks and to rectify inappropriate past policies of the government that have hampered economic performance the fundamental objective of which is to restore sustainable economic growth, the absence of a comprehensive back up strategy of restructuring the political and administrative machines has defeated the very purpose of the programme.

Educational systems

The organization of the provision of school education varies amongst the participating countries as regards entrance age and duration of each level. Countries also differ in the existence and enforcement of compulsory attendance and in adherence to intended age structure. The duration of education varies from 5 to 11 years. In most cases, the period of compulsory education coincides with, or is longer that, the duration of education at the first level.

In most countries, at the primary level, almost or over 100 per cent enrolment has been attained in secondary and tertiary levels there exist big differences in enrolment ratios. Two of the participating countries, Gambia and Namibia do not have universities.

An analysis of development of human potential may begin by probing into the illiteracy rates of the countries concerned particularly for the population aged 15 years and over.

Table 4. Estimates of illiteracy rates - age group 15 years and over

Per cent of illiterate population	1970	1980	1990
80 per cent or more	Gambia Sierra Leone	Gambia Sierra Leone	- -
70-79 per cent	Nigeria	Nigeria	Gambia
60-69 per cent	Ghana Cameroon	-	Sierra Leone
50-59 per cent	-	Ghana	Nigeria
40-49 per cent	-	Cameroon	Ghana
30-39 per cent	-	-	-
less than 30 per cent	-	-	Cameroon

Present investment in education show that there will be a drop in the illiteracy rate provided population is kept at a minimal growth rate Disparities between the sexes (see Table 5) will continue but efforts are being made in the countries to narrow the gap.

Table 5. Estimate of illiteracy rates by sex in 1980 in percentage

Country	Illiteracy rates		Disparity
	Females	Males	
	%	%	%
Gambia	97.2	73.2	24.0
Sierra Leone	90.9	69.7	21.2
Nigeria	86.0	53.5	32.5
Ghana	63.8	46.3	17.5
Cameroon	59.0	29.8	29.2
Namibia	na	na	na

Source MINEDAF (1982) p. 17

Educational structures vary in the participating countries. first level education ranges from 5 to 8 years. The most common organizational pattern is 6-4-3-3, that is, 6 years primary followed by 7 years secondary general which is divided into 2 cycles of 4 and 3 years duration respectively followed by 3 years first degree university education. Both duration and age at entry vary from country to country.

In 1976, Nigeria introduced the 6-3-3-4 system, as the one of the means to achieve its objectives to produce a united, strong and self reliant nation, has 6 years of primary, 3 years of junior and 3 years of senior secondary. The secondary schools have been structured into agricultural, science, technical and arts courses.

Table 6. 1st level entrance age in participant countries

Countries	1st level		2nd level	
	Entrance age	Duration	Entrance age	Duration
Gambia	8+	6	14	4+2
Ghana	6	6	12	4+3
Nigeria	6	6	12	5+2
Sierra Leone	5	7	12	5+2
*Cameroon	4-6	6-7	10-12	4+3
Namibia	na	na	na	na

* In Cameroon, although the official entry age is 6-7, about 75 per cent of the children leave home at the age of four and go straight to class two in the primary school.

Enrolment in the African region as a whole grew at a faster rate than in the other two major developing regions of Africa and latin America. This is true at each level of education, though the increase is often offset by the rapid increase in population growth.

Some of the problems confronting Nigeria in the implementation of the new system of education include: lack of public awareness of the relevance of the new system; lack of infrastructural facilities and equipment; finance and manpower requirements. The new system of education has begun in all the 21 states in Nigeria, though not all have got to the same stage. While some states have graduated students of the senior secondary school level, others either have just admitted students into junior secondary school class one or two.

Very little data is available on vocational education in the participating countries. the general trend in the African region is that enrolment in vocational education which represented 12.8 per cent of the total enrolment in 1970 dropped to 8.7 per cent in 1980. It should also be noted that vocational educational increased at an average annual rate of 7.5 per cent from 1970-1980 compared with 12.2 per cent for general secondary education. Another interesting development is that of technical education in higher education, since during the 1970s many African countries set up new polytechnic schools and colleges or upgraded technical and vocational training courses to college level.

In Gambia, a national council on Technical Education and Vocational Training has been established to ensure among other things that technical education and vocational training is geared towards providing the requisite technical knowledge and vocational skills for agriculture and rural development in particular. Efforts are being made in a number of vocational centres to reorient and rehabilitate people and serve the vocational training needs of both the primary six and middle schools leavers.

Even though the new system of education in Nigeria gave prominence to vocational, technical and professional education, the attitude of the people towards vocational and technical education has not changed much. For instance the performance reports of the four quinquenial plans between 1960 and 1985 revealed gross shortages in middle level manpower and particularly in areas such as water and irrigation. Engineering, machine tooling, petroleum engineering, laboratory and architectural technology, surveying, tow planning, refrigeration and air conditioning, art and design, mechanical engineering

technology accountancy, management studies, banking and insurance, wood/paper technology, production management, building and civil engineering technology and fisheries and food technology also suffered manpower shortages. The cause of the shortages was traceable to inadequate training capacity and inadequacies in the curriculum involving poor diversification in the offerings of technical institutions to reflect the needs of the society. also observed are inadequate resources for technical education and lack of qualified students with requisite qualifications applying for courses in vocational and technical education.

In Sierra Leone, vocational and technical training averaged a growth rate of enrolment at 5 per cent per annum for the period 1975/76-1985/86. Unit costs in real terms, however, fell by one per cent annually. This is not odds with the policy objectives outlined by the government. However, technical and vocational training institutes in 1978 numbered 4, which has now increased to 18. Enrolment at these institutes remained low, growing from 840 to 3,075 in 1985. There are no comprehensive studies on the output and functional capabilities of the graduates. Also, a technical and vocational training programme for training of teachers for secondary schools was established. The National Development Plan 974/75-1978/79, among major policy objectives was that of an acceleration of the expansion of technical education.

The number of vocational and technical training institutions has been on the increase in Cameroon. There exists at least one government technical training institution in each of the country's 49 divisions, excluding privately operated institutions providing vocational and technical training. Only Namibia lacks an Opportunities Industrialization Centre (OIC) for vocational training.

A strategy for Vocational Education and Training (VET) for Namibia 1991-1993 concludes that the proposed technical and vocational training system for the future be based on the model of the highly successful Brazilian training agency SENAI whose outstanding characteristic is what it is focused on private sector industrialists rather than education or labour ministries.

Vocational institutes have been set up in Ghana to give practical skills to those who cannot gain admissions to senior secondary schools. In addition to the skills, the curricula have been oriented towards self employment choices for graduates. Other policy measures involve re-vamping of the non-formal educational system for adults.

In Sierra Leone, the concern with the low status accorded technical and vocational education led to a recommendation that policy should be directed at ensuring uniform standards so that any distinction between these and general education are made in terms of their particular function and not in terms of relative quality. this was because it was felt that only the low achiever entered vocational streams and schools, an attitude prevalent amongst people.

The entry of females into vocational and technical training institutions has been encouraging. Not only does this education prepare them for entry to the informal sector, it also enhances their self confidence and greater participation in the process of development. Much still remains to be done to narrow the disparity between the sexes in access to educational opportunities. this is an important issue particularly when the attainment of a certain level of education for the female population could be conductive to improving health

and hygiene, decreasing the birth rate, reducing illiteracy and in general would result in the improvement of living conditions. In some areas, traditional taboos have to be first of all eliminated as it is generally believed that training a female implied improving the social status of the would-be husband's family and not the girls' own parents. A radical measure is needed in order to change such mentalities before the disparity between male-female education can be minimized.

Higher education

In a world in which socio-economic development is becoming move knowledge-intensive, complex and is relying increasingly on professional and managerial specialists with advance training, the role of higher education becomes a crucial element for any development programme (see Dumitru Chitoran (1990) Higher Education, and Development, Unesco Action for the Advancement of Higher Education and Research in Africa, the Caribbean and the Pacific, the Courier No.15, September-October 1990 p. 55 Brussels. This is especially true for developing countries. Higher education institutions play a key role in the advancement, transfer and application of new knowledge and in training.

The continued backwardness of the region is attributed to its low level skilled manpower potential, as such, the region is not able to master and apply the latest advances in science and technology, let alone to make their own meaningful contribution to scientific progress.

The country reports reveal a paradoxical situation. On the one hand, most of the countries have succeeded in implementing fairly evolved systems of higher education within a very short period of time after the attainment of independence; on the other hand, they are facing at present, dramatic declines in the quality of their institutions and a constantly widening gap vis-à-vis the industrially advanced countries with regard to scientific and technological know how.

On the success side, mention must be made in the first place of the rapid increase in student enrollments and in the proportion of the age-group admitted to higher education. In some of the countries, progress has also been made in the diversification of institutions and curriculum and quality of course content and in the training of nationals for university appointments. Last but not least, there is a growing desire and readiness of African states to move towards the establishment of sub-regional collaborative institutions. Some of these institutions particularly in the area of science and technology, economic, labour and administration have already been established.

This capacity to go beyond national concerns is extremely valuable in the effort to raise the quality of higher learning and of research and to property utilize the dwindling scarce financial resources of the six participating countries. Only two, Gambia and Namibia do not yet have a university. In the case of Ghana, the University of Science and Technology was to provide only science and technology graduates for the planned industrial economy, while the University of Cape Coast was established to train arts and science teachers to man the secondary schools.

Three polytechnics were established to take care of middle level technical staff. Plans are under way to establish a fourth university of agriculture and medicine with a focus on producing practical agriculturalists and middle level doctors to man district and rural hospitals and clinics. Ghana is now adopting an admission policy to obtain a 60:40 ratio between the sciences and arts.

Higher education in Nigeria is structured to last at least four years (polytechnic, and other forms of higher education) for first degrees with the exception of specialized courses like medicine, engineering and architecture. The first two years in the polytechnic lead to the ordinary national diploma (ONC) and the last two years to the award of the National Diploma (D). One of the advantages of the new educational system is that the curricula at various levels are not only relevant to Nigerian culture but more related to the world of work, as emphasis is now placed on the study of crafts, science, introductory technology and vocational subjects. The radical re-orientation of the new curriculum show that it can be a spring board for technological take-off in Nigeria and a positive impetus towards self employment.

Cameroon has also made tremendous efforts in the field of higher education from only one university in the 1960s, the country now has four university centres with a new catholic university expected to be operational by 1992. In addition, many professional institutions have been established. These increases in institutions still fall short of meeting the acute needs of society given its rapidly expanding population. the present student population of Yaounde University is 35 000.

Higher education in the region faces many major needs and challenges. The positive developments mentioned above are overshadowed by a decline in quality of dramatic proportions and insecurity for the future. The first and perhaps most formidable challenge is that of reconciling the ever rising demands made on higher education with the diminishing resources placed at its disposal. The persistent economic recession faced by these countries implies that financial resources are diminishing for the social amenities and education.

Furthermore most of university education expansion has taken place in the liberal arts, and social science disciplines/programmes simply because these disciplines are less expensive to staff and cheaper to equip and operate than science, technology and engineering disciplines. 'In fact, this trend has its origins at the secondary level of education where, because of a shortage of good science teachers and the necessary physical facilities, the schools prepare an overwhelming majority in fields other than science. The pressure of increasing enrollments and lack of funding has also led to diversion of resources away from postgraduate studies and research' (Dumitru Chitoran, op. cit.).

The participating countries in the course in a variety of forms defined the development of the educational system as a primary task in pursuit of socio-economic development and political transformation. It seems obvious that enrolment ratios and also participation rates in these countries will grow in the future.

The country reports also showed that higher education in sub-Saharan Africa was undergoing a crisis in growth and structural crisis. Crisis in growth in the sense that with a rapidly expanding population, there are more demands for admission into institutions of higher learning. Institutional infrastructures have not expanded to meet the admission

pressures. Seen within the context of the economic crisis, that has seriously affected many aspects of society, many people now question the aims of the education system since most graduates cannot find employment. Many graduates find themselves more and more involved in the informal sector in order to sustain themselves and to look after their ageing parents or relatives.

The country reports do not mince words when describing the immense abyss between the education system borrowed from Europe -- a highly structured society based on other values and ways of life which colonization imposed on African countries and which seems difficult to dismantle. The consequences have been many; it has in many respects failed to propel African countries who sustainable self-reliant growth and political dependence. It has systematically divorced the African from his social and cultural heritage.

The move by most countries to orient the education system, particularly university graduates, towards self-employment could be the answer to the barrage of criticism about an existing unsuitable and expensive education system which turns out too many graduate with qualifications which are not very useful to society.

The country reports showed the need for of higher education do become the crucial element or any process of socio-economic transformation ; higher education institutions should play the key role in the advancement, transfer and application of new knowledge, in training the professional, technical and managerial staff forging the cultural identity and fostering democratic processes, while providing also an avenue for social mobility.

There was strong emphasis on a linkage between education and the industrial sector and bringing science and technology related disciplines more and more into education planning and curriculum orientation. Ghana and Nigeria are making tremendous efforts as promote science, technology and engineering related disciplines in their curriculum.

However, the economic crisis, political unrest and other factors plaguing the participating countries have caused a crippling outflow of high level manpower, especially to the industrialized countries. Ghana, Nigeria and Cameroon are victims of this outflow, while in Namibia the war for independence kept away most of their trained human resources. The attainment of independence a year ago boosted the return of trained as well as untrained human potential.

Educational financing

There has recently a sharp drop in financial allocations to education in most of the countries. for the period 1965-1986, educational expenditure in Sierra leone averaged 20.5 per cent of total government current expenditure. Since then, the percentage of total expenditure spent on education has fallen by over 50 per cent. At constant 1980 prices actual development expenditure allocated to the Ministry amounts to less than 2.8 per cent in the 1989/90 fiscal year.

Ghana, on the other hand, has kept up its financial allocation to education. Since 1972, the percentage of budget allocation to education has been high ranging from 20 per cent in 1972 to about 30 per cent in 1985 (see Table 7).

Table 7. Educational expenditure as percentage of national budget and GNP in millions of current codes

Year	Education	Total budget	% of budget	% of GDP	GDP
1985-86	10 205	45 764	22.2	3.0	343 046
1986-87	16 905	70 660	23.9	3.3	511 373
1987-88	27 044	102 135	26.5	3.6	746 000
1988-89	36 995	143 897	25.7	3.5	1 047 858
1989-90	47 692	196 466	24.3	3.3	1 419 675
1990-91	58 212	-	-	3.7	1 565 000

Source: Quarterly Digest of Statistics 1990, Ministry of Education Ghana.

Educational expenditure in Cameroon in 1984 was 17.2 per cent of the budget, for Gambia it was 9.7 per cent of the budget, 21.5 per cent for Ghana, 9.3 per cent for Nigeria; and 4.1 per cent for Namibia (1983).

In spite of the marked disparities from country to country, the six participating countries have been making a major financial effort in favour of education, in relation to their GNP. In fact, it is the low level of the GNP of these countries that prevents them from providing sufficient resources in absolute terms for the development of their educational systems at all levels. (As discussed at the beginning of this paper).

Relating education to employment

The functions and role of higher education has been treated in the previous section, both how useful are the graduated to society after the completion of their studies; in what ways do they contribute to the process of socio-economic transformation?

Tableau 8. Labour Force

Sierra Leone	1 352 000	60%	agriculture	19%	industry	6%	service
Nigeria	36 568 000	67%	agriculture	19%	industry	27%	service
Namibia	477 000	55%	agriculture	20%	industry	27%	service
Gambia	307 000	80%	agriculture		--	--	

It can be seen that most of the labour force is employed in agriculture, the second largest sector being services and only about 20 per cent in industry.

The country reports were quite clear on a linkage between education and employment and means existed in the respective participating countries to facilitate students' transition from the education system to the world of work.

The down turn in the economic fortunes of Nigeria and the world economic recession, have necessitated a structural adjustment programme and aggravated the problem of unemployment of graduate and the school leavers in the formal sector of the economy. Although the number of schools leavers in Nigeria is consistently on the increase, employment opportunities, even the rationalization of personnel in the formal sector based on the structural adjustment programmes are limited. The scenario created by this situation is that conscious efforts are being made by the Nigerian government to ameliorate the situation of unemployment, accommodate the mass of unemployed in the informal sector: encourage self-employment and entrepreneurial skills development through the peoples bank and community banks provided initial capital for small enterprises do people on the informal sector, artisans, etc.

So far, the main concern of the government of the newly independent state of Namibia is focused on establishing a legitimate control over the country. Because of the far reaching implications of these issued, very little scope for experimentation exists. A similar situation concerning the implementation of an efficient education and training system prevails. However, as the education situation stabilizes in the future, suitable opportunities for experimentation to enhance the education-employment relationship will naturally be utilized. Provision has been made within the Ministry of Education and Culture to study the pattern and trend of development.

The restructuring of the educational system under a new educational policy in the Gambia also addresses the problem of education for alternative types of employment. The basic cycle embraces both vocational and technical subjects so as to open up new avenues into the world of work. Furthermore, the Management Development Institute (MDI), the Gambia Technical Training institute (GTTI) and the Indigenous Business Advisory Service (IBAS) are each involved in the development of entrepreneurial skills covering both literate and illiterate citizens interested in self-employment.

Ghana has adopted a strategic education policy aimed at relating education to employment. The objectives of the reform include among others:

- reduction of the pre-university schooling period from 17 to 12 years,
- an improvement and expansion of curricula to include skill oriented disciplines,
- relating education to self-employment.

A relatively poor situation exists in Cameroon with regard to the education-employment relationship. Apart from the fact that educational curricula are not directed towards meeting the acute needs of society, there exists a mismatch between graduated and employment.

An early initiative was taken in 1974 when the Cameroon government launched the National Civil Service for Participation in Development. The programme is focused on reducing the numbers of unemployed aged 16-55 years, by equipping them through training with the right attitudes and enthusiasm necessary for their effective participation particularly in rural development.

The newly created national Office of Employment and Manpower has yet to come up with a concrete policy strategy to narrow the wide gap that exists and given the continuing economic stagnation, this mismatch is likely to continue for some time. In addition, the country is affected by both the phenomenon of graduate employment and under-employment. One outstanding characteristic of the employment situation in Cameroon is that the private sector is not yet adequately developed and as such most graduates rely essentially on the public sector for employment. Consequently, the incidence of unemployment is bound to increase. Another factor is the lack of orientation to professional education. Most graduates have a general certificate qualification and find it ill adapted to the private sector. As an attempt to improve upon the employment situation of graduates, the University of Yaounde has recently introduced professional degree programmes at the post graduate level. However, since such a programme is still at an early stage, it is difficult to make an appropriate appraisal of the situation and of its effects in the labour market.

Another method considered in the country now is that of linking the university to the industrial sector through the establishment of science parks. Getting the private sector to sponsor research activities within the university campus is an indirect way of including them to employ some of the graduates involved with the research activities. The introduction of a career guidance scheme in the university and educational system would help in establishing links between education and employment and in minimizing the gamble in choice of job.

Educational planners in Cameroon like others elsewhere should receive specifications of jobs of those they plan to train from business firms, banks etc. It is through this inventory of jobs that training may be oriented in order to produce what the employment market really needs. The failure of many of our educational institutions to respect guidelines of job analysis has often resulted in job saturation, i.e where the country continues to train people with the same skills for a long time.

There are no figures existing in Cameroon on graduate unemployment. The problem is, however of such alarming proportions that in 1990 the Cameroon Government created a manpower Assessment Bureau whose major objective is to collect date on all underemployed Cameroonians and put it at the disposal of the Ministries of Planning and labour. Nevertheless of one looks at the enrolment of students in Yaounde University and other related institutions of higher learning, and takes into account the low level of achievement of students, which is a less than 50 per cent, graduation rate as well as the fact that the Cameroon Government has frozen employment in the past four years, one may have a rough idea of the situation of graduate employment in Cameroon. The Sixth Five-Year Plan 1986-1990/1991 gives an estimated figure in three faculties at 14,795 graduates. It is also reasonable to assume that this number is in the job market. Added to this number are thousands of graduates from universities abroad. A conservative estimate puts the total at 20,000. To this figure should be added the large number of graduates being dismissed from public, para-public and private sectors. The extend of educated (especially graduate) unemployment, is therefore sharply on the rise and will continue to be so as long as the economic crisis persists.

Conclusions

To improve on human resources development a concerted strategy must be built around the key elements of:

- changing attitudes,
- organizational reform,
- resource mobilization and utilization,

In effecting this strategy, the role and organization of government will require a radical change. By the same token, the international community and the various multilateral-bilateral organizations should also change their attitudes and respond positively.

The country reports emphasized three critical aspects:

- tailoring the educational system to meet the needs of the country,
- linkages between education, research and the productive or industrial sector,
- co-operation between the public and private sectors in enhancing human resources development through adequate allocation of financial resources, provision of infrastructures and the creation of job opportunities for a rapidly growing educated population.

One of the central themes emerging from the country reports and also emphasized during the discussions was the importance of participation in all aspects of development education, including needs assessment, implementation and evaluation. The country reports also stressed the need for Non-Governmental Organizations (NGO) to be more active and conscious of social and political issues in the respective countries, when initiating different development projects to improve skilled human potential and capacity.

Co-operation within and between countries has to be encouraged and deployed to foster a mutual approach to development education; all forms of paternalism should be avoided.

The country reports also expressed an urgent need to look into and redress the problems of the productive sector and capacity in the respective countries. Without an improvement in the productive sector, the issue of unemployment cannot be resolved. Hence, the struggle for a fair return on the price of raw materials, the efforts to resolve the problem of debts, the development of alternative systems of aid etc. should be the top priorities in the action programmes of African countries.

Both the country reports and issues emerging from the discussions showed a agreement amongst participants that the training workshop exposed the hidden realities of the problems, and that it brought are the mutual reinforcement of development and development education, planning and policy making. They also agreed that development education and employment programmes must:

- link development educational systems in the respective countries with forces for social change in other parts of the continent and the world;

- develop strong links among African programmes and emphasize the spirit of partnership;

- develop social analysis of African issues;

- continue to support long-term activities; and

- incorporate the marginalized groups: women, the rural and urban poor in the development process.

According to the papers presented, policies in the six participating countries were based on a chain of assumptions, which seemed to be surprisingly similar. That perhaps this should be no surprise. To begin with all these countries were former British colonies which inherited the same kind of education and administrative system. Cameroon's unification of the British and French administrative system is somewhat different.

The first assumption is that development is equal to economic growth. The second is that education is one of the factors which positively influences economic growth. Thirdly, the reports implicitly and explicitly demand political change, some of which is taking place in the opening up of the political system to more participation; freedom of expression, public accountability and responsive organization and management.

In the sub-region of West Africa, there are examples of the effectiveness and success of development policy, particularly the reforming of education systems which have been based on improvement of education curriculum making it more compatible when the genuine and acute needs and problems facing the country.

The lack of statistical data and the profound effects of the current economic crisis featured widely in the reports. Detailed accounts of the policy measures envisaged by the governments was presented. A common thread running through the report is the determination within each country to overcome existing problems and develop new economies and modernize their societies. The desire to change exists but the political will seems lacking since the current custodians of political forces fear, that such change will erode their power base. That perhaps remains the most outstanding problem facing the countries.

In these countries, there is a persistent debate concerning questions of quality and moral rectitude; the role education should play in society, the degree of autonomy and independence of educational institutions vis-à-vis structures outside the education system, the quality of the curriculum, teaching process and methods and related personal development of students, the type of knowledge to be imparted and not least the goals of education.

While the reports did not address all these issues in depth, nevertheless, it was agreed that the poor level of instruction, low turn out, non-participation in certain disciplines is the result of not only insufficient primary school coverage but also of the infrastructural and

technical conditions under which most educational institutions operate while performing, a role which is without due consideration for the needs of the majority of the population.

Further, the reports saw education as a fundamental support for national unity and identification and as a means of transmitting creative participation in the process of development. The reports also draw attention to the effects of the diminishing budgets caused by the debt crisis and worsening economic situation. It is clear that state education systems are becoming seriously impoverished.

Emphasis was laid on developing the modern informal and traditional sectors. It was also argued that the traditional sector made up of indigenous or peasant communities was increasingly marginalized. In addition, the prevailing development policy focusing more on the urban areas contributed to the drift from the countryside. The mushrooming of shanty towns adds to unskilled unemployment that exists side by side with unemployment of graduates who are now forced to do work of a generally inferior kind. There is an erosion of talents or rural areas which makes it impossible for traditional skills and techniques to be passed from one generation to the other. Education and particularly adult education is necessary to bridge the gap in order to encourage continuation of traditional science, knowledge and skills in the agriculture sector as well as in craftsmanship. The countries should do everything to rehabilitate the peasant community through a wide variety of relatively integrated socio educational programmes, including health. Poor health and illiteracy affect the marginalized and reinforce underdevelopment and exploitation.

Thus to give a decisive impetus to education for socio-economic transformation, literacy campaigns at all levels, as well as primary, secondary and university education should be intensified and adequately molded to respond to the acute needs of the people.

Recommendations

Synthesis of the reports pointed to the following recommendations concerning Human resource development:

- the urgent needs to expend all efforts towards the eradication of illiteracy by the year 2025;

- attempts should be made to accelerate educational reforms and to tailor curricula to realities and needs of society;

- national and regional co-operation should be fostered and international assistance incorporated in consultations on the fundamental issues of illiteracy and underdevelopment in Africa. It must be recognized that internal fragmentation leads to regional fragmentation and lack of international support towards seeking a concerted solution to the issues of illiteracy and all that is related to it.

It was further recognized that certain internal and external factors impede the development of human resources in he region:

- the persistent state of poorly developed human resources in the participating countries is attributed to the existence of a serious gap between investment in physical infrastructure and human infrastructure end this has greatly contributed to the misutilization and under-utilization of existing human capacity;

- some, though not all the countries have failed to make adequate socio-economic progress due to the present economic crisis. The unavailability of sufficient financial resources has contributed to insufficient human resource development and the lack of skilled human potential to manage development programmes;

- the existing political instability and social turmoil has hindered education, employment and human resource development in the regions;

- the international community has not responded positively towards the solution of the problems faced by these countries.

It is therefore necessary to make concerted efforts and generate a political will for the urgent realization of goals, by immediately taking action on:

- the need to raise awareness of policy makers about the need for human resource development and articulate and aggregate relevant policy strategies towards the goals of human resource development;

- both national governments and the international community should exert more efforts in making their concern for human development fully operational;

- national governments should exert efforts to collecting up to date social data to ensure standardization and compatibility. The present system of data collection is weak and information on various socio-economic and human indicators outdated;

- future national development plans should focus on a strategy for human development. There has to be a restructuring of domestic investment priorities and a clear need to mobilize domestic resources towards such goals.

There is a general agreement that the final responsibility for a cohesive and concerted restructuring of development process of a nation was purely the responsibility of that country. Each country should set out their priorities, and step up horizontal co-operation while maintaining a high level of self-criticism, working together with limited resources but with the firm resolve to turn the situation around. By and large significant progress has been achieved but much is still to be done in developing the means and generating positive action. What is lacking so far is the political will to act positively.

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* Papers presented in the IIEP/UNESCO/ISH Sub-Regional Training Course on Education, Employment and Human Resources*

Appendix 2

Welcome address by Dr. Dorothy L. Njeuma
Director General, Buea University

The Representative of the Minister of Higher
Education, Computer Services, and
Scientific Research,

The Representative of the Governor of
the South West Province,

The Resident Representative of the United
Nations Development Programme to Cameroon,

The Representative of the Director of the
International Institute for Education Planning,

The Representative of the Director
of the Institute of Human Sciences,

Dear course participants,
Distinguished invitees,
Ladies and Gentlemen.

It gives me great pleasure, on behalf of the entire student body and staff of Buea University Centre, to welcome all of you to our institution this morning. We are indeed highly honoured that the International Institute for Educational Planning has chosen Buea University Centre to host this important sub-regional training course which brings together distinguished personalities from English-speaking West African countries - Gambia, Ghana, Nigeria, Sierra Leone and Cameroon -- as well as from Namibia, to examine the theme : Education, Employment and Human Resource Development.

The countries of sub-Saharan Africa to which we belong are going through an extremely difficult period, characterized by declining economies, increasing debt burden and increasing poverty. In its World Development Report for 1990 entitled 'Poverty', the World Bank describes the 1980's as a 'lost decade' for our region. As measured by per capita income and investment, living standards grew elsewhere in the developing world during the 1980's (particularly in South Asia and East Asia); but they dropped significantly in sub-Saharan Africa. Net enrolment at primary level was only 56 per cent in Sub-Saharan African in 1985, whereas it attained 100 per cent elsewhere. Life expectancy for sub-Saharan Africa was still only 50 years, as against 76 years for the developed world and 56 years for South Asia.

The rural population and women constituted deprived groups among the poor in the 1980's, with lower literacy rates, lower wages and more difficult access to social services and employment.

Prospects for the 1990's are indeed bleak for our part of the world. The uncontrolled rapid growth of population in our countries will very likely offset any economic growth which may be realized. The population of sub-Saharan Africa in 1985 stood at 450,000,000, with 175,000,000 (or 38.9%) described as poor, earning an annual income of less than $370 per capita. With a growth rate that exceeds 3 per cent per annum, our region will attain a population of about 615,000,000 by the year 2000; the number of poor will increase to 275,000,000, or 44.7 per cent of the population. Whereas poverty is expected to decline elsewhere in the world, it is only in sub-Saharan Africa that it will increase in the 1990's. Whereas our region had 16 per cent of the world's poor in 1985, it will have 30 per cent of the world's poor by the year 2000.

Against this background, it is clear that the task of development for the countries of our region, and hence of our sub-region, is overwhelmingly immense; it is indeed daunting. It is against this background that we have to examine here the question of education, employment and human resource development.

Our populations are young. The census figures just released for Cameroon show that 56,3 per cent of the population of nearly 12,000,000 in March 1991 is less than 20 years old. The average age of the population is 22 years. The rate of scolarization is 73 per cent. In 1990/91, there are nearly 2,000,000 children in primary and secondary schools and over 40,000 in universities. The state is expected to spend about 100,000,000,000 FCFA, or 16,5 per cent of its budget on education this year, at the expense of other sectors of the economy which are just as vital for development and for the well-being of our people.

Education is becoming increasingly more difficult to finance. By the year 2000, the population of Cameroon is expected to be 15,400,000. We are going through an economic crisis, which means that funds available to finance education are dwindling. Yet each year there are increasing numbers of children for whom education should be provided.

At present, 65 per cent of the active population is employed, 8 per cent of whom are job-seekers. Fifty nine per cent of the employed active population is self-employed, 82 per cent of them in the primary sector (agriculture). Approximately 35 per cent of the active population is consequently unemployed.

Jobs are getting more and more difficult to come by. Yet we are turning out more school leavers and more graduates who must earn a living one way or another.

Those of us involved in the training of young people have been accused of not relating education to the world of work. But what are the needs of the job market? What are the guarantees that with declining economies and increasing populations, the 'right type' of school leavers and graduates would find work or have opportunities to create work?

These are some of the questions which we think portray the complicated nature of educational planning in our countries. We are highly honoured that the Minister of Higher Education, Computer Services and Scientific Research who trains manpower at the highest

level has sent a very highly-placed official to represent him at the opening ceremony of this training course. The presence here of the Resident Representative of the United Nations Development Programme is very encouraging indeed. It is gratifying that UNESCO, through its international institute for Education Planning, places the problem of education and employment at the centre of its preoccupations.

Once again, we welcome you all to Cameroon and to Buea University Centre. We wish you a pleasant stay with us and hope that your work here will be crowned with success.

Appendix 3

Opening speech by
Professor Mathieu-François Minyono-Nkodo
Secretary General of the Ministry of Higher Education,
Computer Services and Scientific Research

The Secretary General of the South West Province representative,
The Excellency the Governor of the South West Province,

On behalf of the Minister of Higher Education, computer Services and Scientific Research, I would like to say that your distinguished presence in our midst this morning enhances the glamour of the opening of this Seminar on education, employment and human resources development.

The Representative of the International Institute
of Planning and Education,

The Representative of the United States Agency
for International Development, Yaounde,

The Representative of the British Council,

The Representative of the United Nations Development Programme,

We owe the holding of this sub-regional training course grouping of no less than six countries of great and prestigious African educational traditions to your generous initiative. Through your respective contributions, you have given my country and other participating countries the opportunity to come together to learn about the benefits of the planning which is the foster-mother of educational science.

The Government of the Republic of Cameroon highly appreciative this very precious co-operation that you are bringing to this crucial domain.

Kindly, convey our immense gratitude, as the case may be, to the Director General of UNESCO, to the American Government, to her Majesty's Government.

The Director of the Institute of Human Sciences,

Your institution, the Institute of Human Sciences in collaboration with the 'Institut International de Planification de Paris' is the main organizer of this Seminar. This is a good example of satisfactory co-operation between Cameroon and UNESCO which we would like to see strengthened and renewed to the benefit of member states of UNESCO in general and of Africa in particular. Thank you for your personal presence at this ceremony.

The Director General of the Buea University Centre,

By accepting to throw the doors of the Buea University Centre open to the organizers and participants of this workshop, you have at the same time made a contribution to this young university, which we will have a bright future, and what your will remain personally committed to the service of international co-operation. The organizers, participants and myself are indeed very grateful to you.

Participants,
Distinguished Seminarists,

On behalf of the Government of my country, I would like to warmly welcome each and every one of you to Cameroonian soil.

I wish you a very agreeable and fruitful stay in Buea, this historical and legendary town, on Mount Cameroon, which is our pride, a symbol and an attraction to visitors. May the gods of this Cameroonian Olympus inspire you for the progress and for the greatest benefit of our peoples.

Ladies and Gentlemen,
Dear Participants,

The importance of this seminar on education, employment and human resources development is beyond description. In fact, the low exploitation of resources is one of the difficulties which imposes a strangleholds on our African countries as well as being one of the heavy drawbacks to our African economies. This green and rich Buea region, for example, is a testimony to this, which is a characteristic.

All observers and specialists are agreed on this sad reality: the poverty of Africa, that is of Black Africa, does not stem from the lack of resources but from their under-utilization and from their under-development.

By choosing the theme education and employment for your deliberations, you have pin-pointed one of the major aspects of our economic planning and educational policies: the balance between training and employment or, in other words, which is the best system of training for the development of our countries?

Dear Seminarists,

On looking through your programme, certainly with a layman's eye, I am particularly satisfied with the subjects scheduled for courses and discussions. You did not limit yourselves only to the formal educational system. You have also taken into account the informal system which is very much practised in our countries, notably urban and rural handicrafts. However, you did not reduce the notion of employment to salaried workers. You will thus be examining our educational systems from a double angle that is the basic policy of the Government of Cameroon.

For us, the educational system must be geared towards the training of real agents of development. This means that it must produce cadres and graduates capable of fitting into

the national production line as salaried workers, creators of enterprises or employment generators.

Ladies and Gentlemen,

The importance of a seminar, even a seminar on educational planning, cannot claim miracle solutions and spectacular findings for itself. That would be an exaggeration. I appreciate the pertinence of this seminar from a twofold angle. It is held at a time when the world economic crisis is affecting Africa to the point of destruction. It enables us to lay emphasis on the major asset which should take us out of the crisis. This major asset is simply and his industrious vocations.

This means, as the title of your workshop suggests, that the development of human resources must be given priority. It also means that our educational systems should, more than ever before, be essentially oriented towards the problems of development and employment.

However, I would have failed in my duty if I were to talk only on the content of your workshop. Beyond its interest, the main issue of this training course lies in its institution, and in its method: *planning*. Indeed, planning, without being a panacca, is an indispensable instrument for our educational policies. It allows for full, whole and systematic mobilization of human resources. It leads to an efficient utilization of the labour force, be it school-trained or not.

That is why my country is satisfied to have been chosen to host this seminar, and why I very warmly greet our brothers from Gambia, Ghana, Nigeria and Sierra Leone.

However, I would particularly like to greet wholeheartedly the delegates from Namibia. Their presence here symbolizes the audacity of contemporary Africa and the undeniable capacity of its sons, not to talk of its human resources, to avert all evils, to take of all challenges. Yesterday, it was the challenge of colonization. Today, it is that of under-development coupled with the demon of the economic crisis.

Ladies and Gentlemen,

While wishing you all a good stay in Buea and a safe return to your countries, I entertain no doubts of the brilliant success of your deliberations.

It is with this wish that I declare opened the training course on education, employment and human resources development.

Long live International Co-operation
Long live Cameroon.

Appendix 4

Programme

Module 1: Introduction

Tuesday, 2 April 1991

08.00 - 09.00 Registration of Participants.

09.00 - 10.30
- Address of welcome by Director General, Buea University Centre.
- Official opening,
- Keynote speech,
- Vote of thanks,
- Programme organisation.

11.00 - 12.30 Presentation of national cases in working groups.

14.00 - 17.00 Presentation of national cases (continued).

Wednesday, 3 April

08.30-10.30 Plenary: Reporting on group presentation of national cases.

11.00-12.30 Plenary: Diagnosis of education-employment situation: formal sector
- Basic concepts.
- Practical exercise in working groups.

14.00-15.30 Practical exercise (continued).

16.00-17.00 Plenary: discussion of results of practical exercise.

Thursday, 4 April 1991

08.30-10.30 Plenary: education and the informal sector: an overview.

11.00-12.30 Plenary: training issues in the informal sector.

14.00-14.30 Film show on informal sector.

14.30-17.30 Field trip to the informal sector of Buea.

Friday, 5 April 1991

08.30-10.30 Write up and presentation of field reports on the informal sector.

Module 2: Manpower approach to educational planning

Friday, 5 April 1991

11.00-12.30 Plenary: estimation of manpower supply and demand.

14.00-15.30 Plenary: introduction to exercise on manpower supply and demand.

16.00-1700 Practical exercise in working groups.

Saturday, 6 April 1991

08.30-12.30 Practical exercise (continued).

Monday, 8 April 1991

08.30-10.30 Practical exercise (continued).

11.30-12.30 Practical exercise (continued).

14.00-17.00 Use of computers for estimation of manpower supply and demand.

Module 3: Role of social factors and functioning of labour market in relating education to employment

Tuesday, 9 April 1991

08.30-09.15 Plenary: Film show: 'The diploma disease'.

09.15-10.30 Plenary: critical review of manpower approach to educational planning including the role of student flow and other factors.

11.00-12.30 Plenary: theories of labour market adjustment mechanisms for allocation and utilisation of human resources and the role of tracer studies.

14.00-17.00 Exercise on tracer studies.

Module 4: Strategies for a better match between learning and work

Wednesday, 10 April 1991

08.30-10.30 Plenary: small scale enterprise development and training.

11.00-12.30 Plenary: large scale enterprise development and the role of education and training.

14.00-15.30 Plenary: education, training and productive work.

16.00-17.00 Plenary: vocationalization of secondary education.

Thursday, 11 April 1991

08.30-10.30 Plenary: strategies for a better match between learning and work: A synthesis.

11.00-11.30 Film: 'Social science research'.

11.30-12.30 Evaluation of the course.

Afternoon FREE

Friday, 12 April 1991

08.30-16.00 Field trip to the industrial sector (SONARA + IDENAU).

Saturday, 13 April 1991

09.00-10.00 Adoption of draft report of the training course.

10.00-10.30 Statements by trainee representative.

10.30-11.00 Presentation of certificates.

11.00-11.15 Official closure.

Appendix 5

List of participants

		Sponsor
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Chairman:
Victor L. Urquidi, (Mexico) Research Professor Emeritus, El Colegio de México, Mexico.

Designated Members:
Alfredo H. Costa Filho, Director-general, Latin American and Caribbean Institute for Economic and Social Planning, Santiago.
Goran Ohlin, Assistant Secretary-General, Office for Development, Research and Policy Analysis, Department of International Economic and Social Affairs, United Nations.
Visvanathan Rajagopalan, Vice President, Sector Policy and Research, Policy, Planning and Research, The World Bank.
Allan F. Salt, Director, Training Department, International Labour Office.

Elected Members * :*
Isao Amagi, (Japan), Special Advisor to the Minister of Education, Science and Culture, Ministry of Education, Science and Culture, Tokyo.
Henri Bartoli, (France), Professor, University of Paris I, Pantheon-Sorbonne. Paris.
Mohamed Dowidar, (Egypt), Professor and President of the Department of Economics, Law Faculty, University of Alexandria.
Kabiru Kinyanjui, (Kenya), Senior Programme Officer, Social Sciences Division, International Development Research Centre, Nairobi.
Lennart Wohlgemuth, (Sweden), Assistant Director-General, Swedish International Development Authority, Stockholm.

* (two vacancies)

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